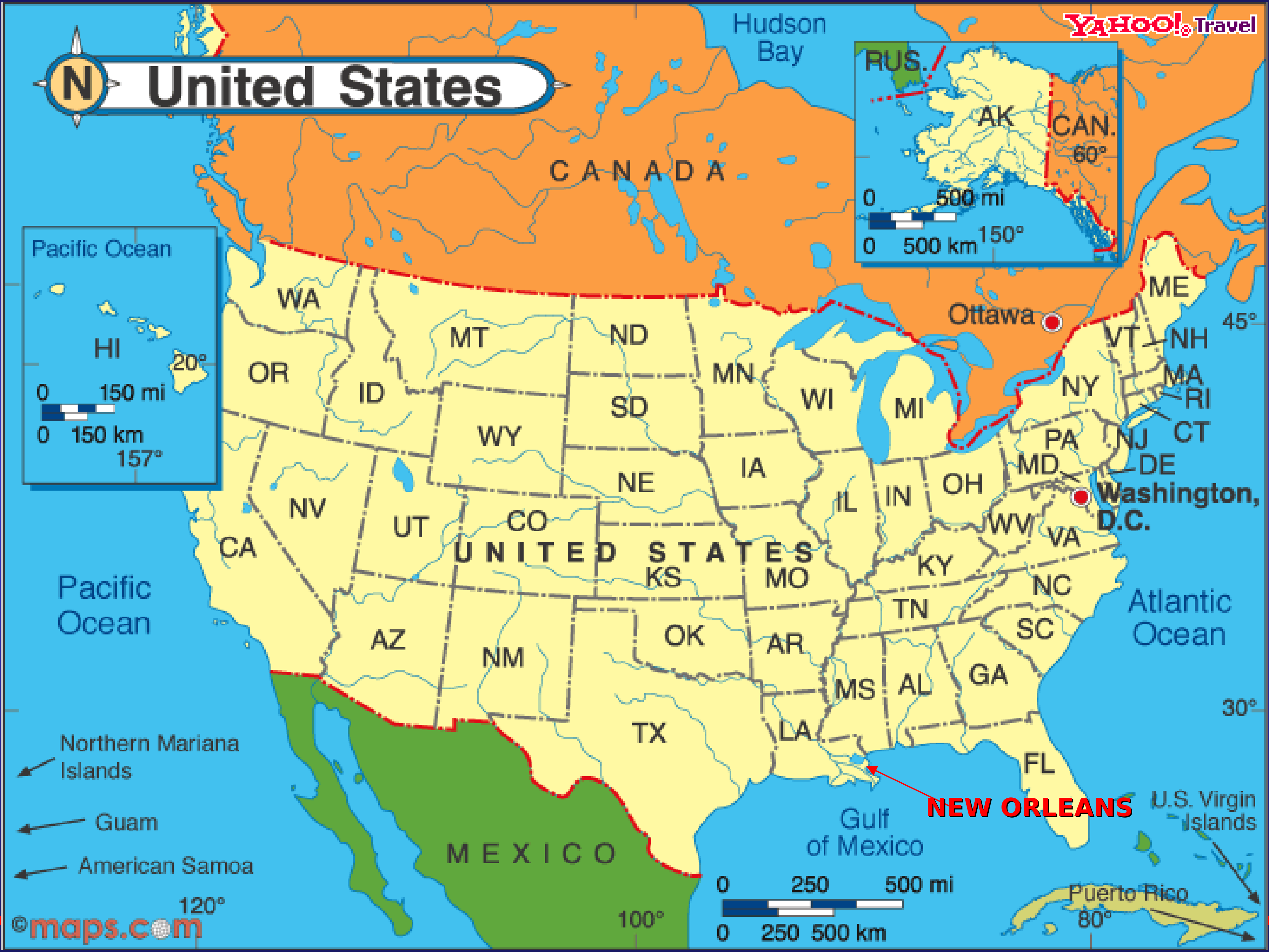
Hurricanes Katrina and Rita:

The Unwatering of New Orleans

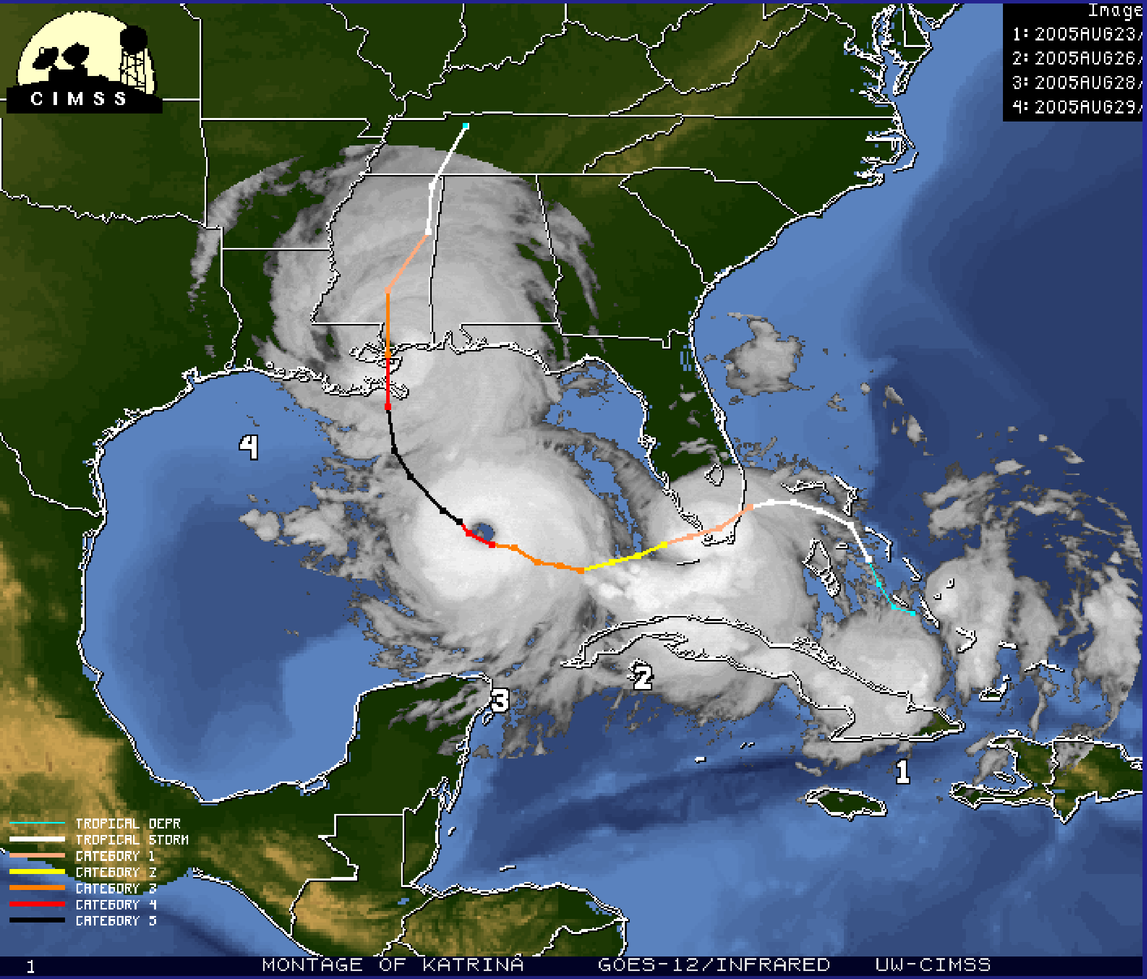
Colonel Duane Gapinski, P.E.


United States
N
YAHOO! Travel
Hudson Bay
RUS.
AK
CAN.
60°
0 500 mi
0 500 km
150°
CANADA
Ottawa
Pacific Ocean
HI
20°
0 150 mi
0 150 km
157°
WA
OR
ID
MT
ND
SD
MN
WI
MI
WY
NE
IA
IL
IN
OH
NV
UT
CO
CA
UNITED STATES
KS
MO
KY
AZ
NM
OK
AR
TN
MS
AL
GA
TX
LA
FL
ME
VT
NH
MA
RI
CT
NY
PA
NJ
DE
MD
WV
VA
NC
SC
Washington, D.C.
45°
30°
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
NEW ORLEANS
MEXICO
Northern Mariana Islands
Guam
American Samoa
U.S. Virgin Islands
Puerto Rico
120°
100°
80°
0 250 500 mi
0 250 500 km
©maps.com

New Orleans
& Southeast Louisiana

US Army Corps
of Engineers ®

Hurricane Katrina


CIMSS
Image
1: 2005AUG23/
2: 2005AUG26/
3: 2005AUG28/
4: 2005AUG29/
4
2
3
1
TROPICAL DEPR
TROPICAL STORM
CATEGORY 1
CATEGORY 2
CATEGORY 3
CATEGORY 4
CATEGORY 5
1
MONTAGE OF KATRINA
GOES-12/INFRARED
UW-CIMSS

- One of America’s largest natural disasters
- More than 1,300 dead
- 127 MPH wind at landfall
- Maximum surge of 28 to 30 feet along Mississippi coast
- 51.9 million CY of debris (Louisiana and Mississippi)
- 80 percent of New Orleans flooded
- $96B in damages

National Response Plan

US Army Corps
of Engineers ®

State

Request

FEMA

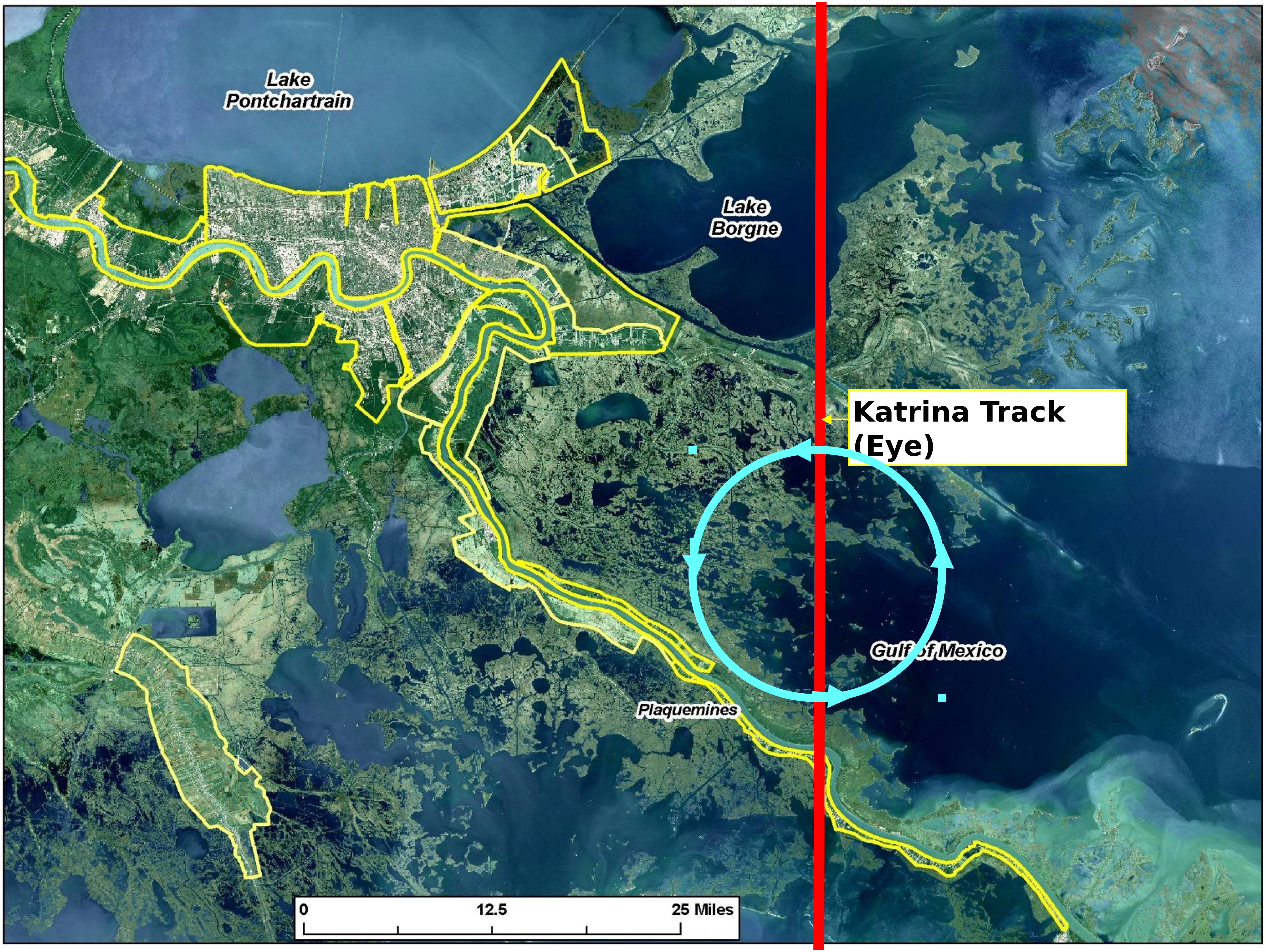
Request

Assigns Mission

Local Municipality

Provides Support

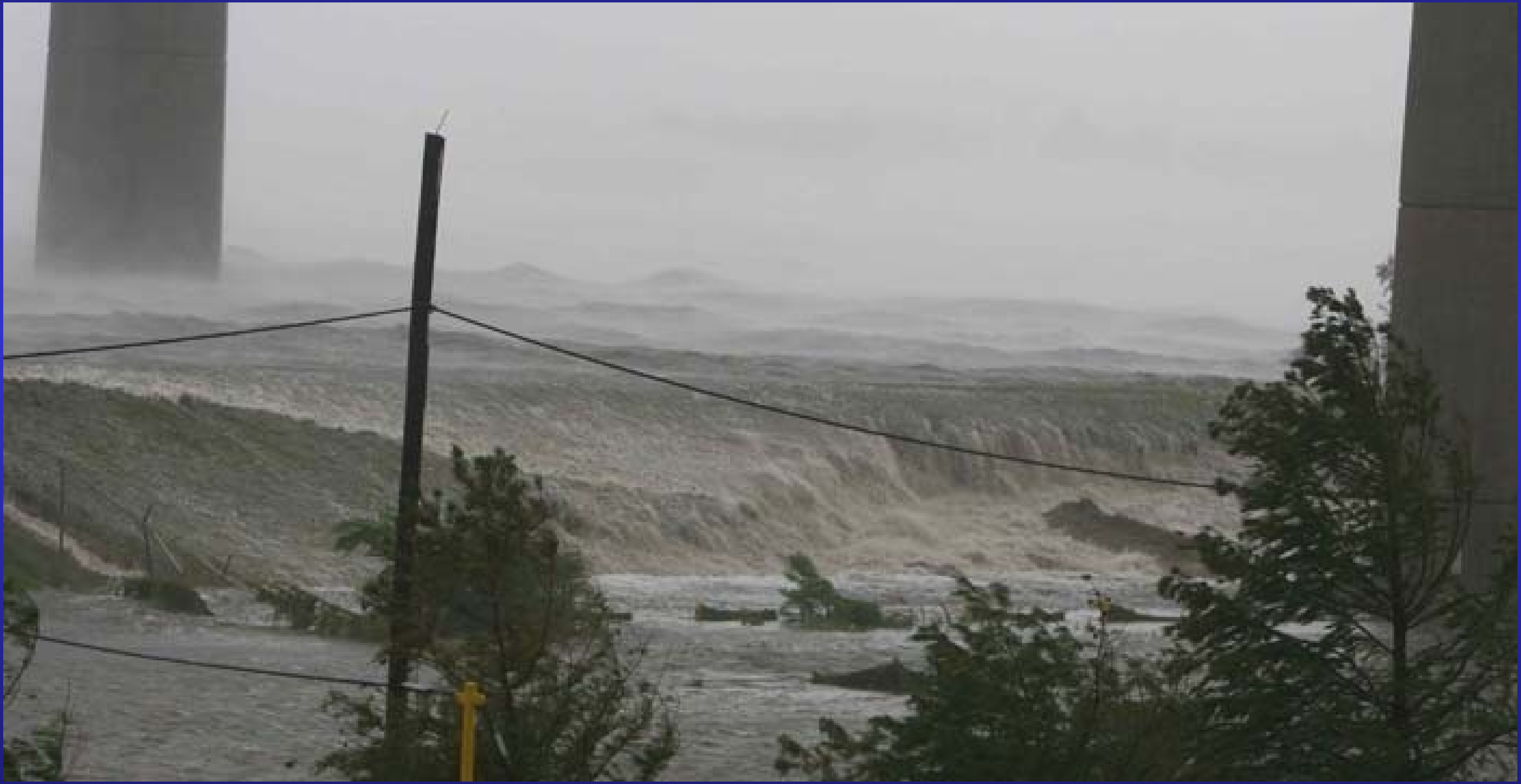
Emergency Support Function



Katrina Track (Eye)

Lake Pontchartrain
Lake Borgne
Gulf of Mexico
Plaquemines
0
12.5
25 Miles

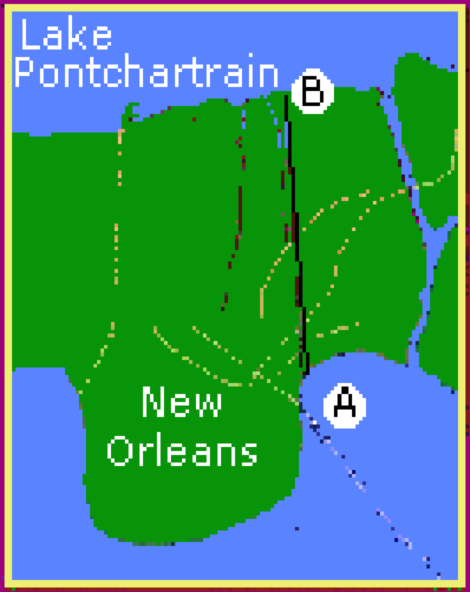
Storm Surge

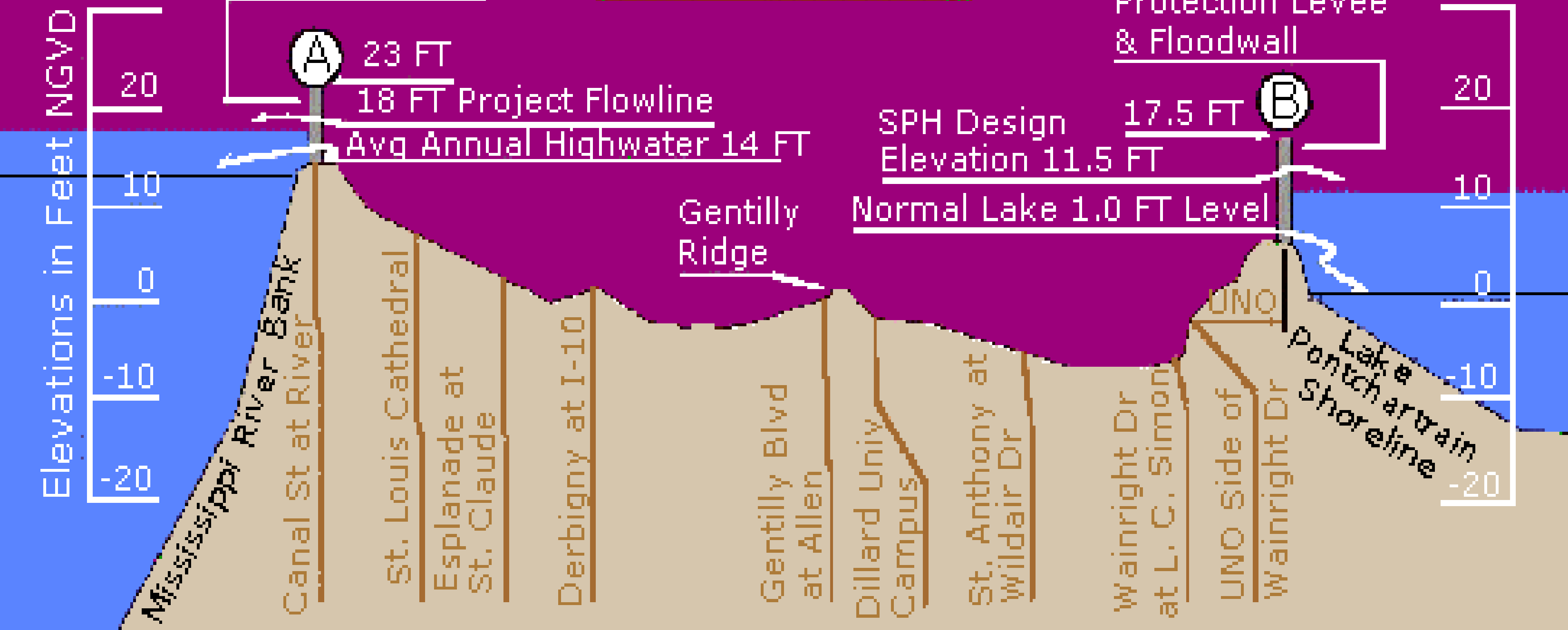


City of New Orleans Ground Elevations

From Canal St. at Mississippi River to the Lakefront at U.N.O.

Area Map

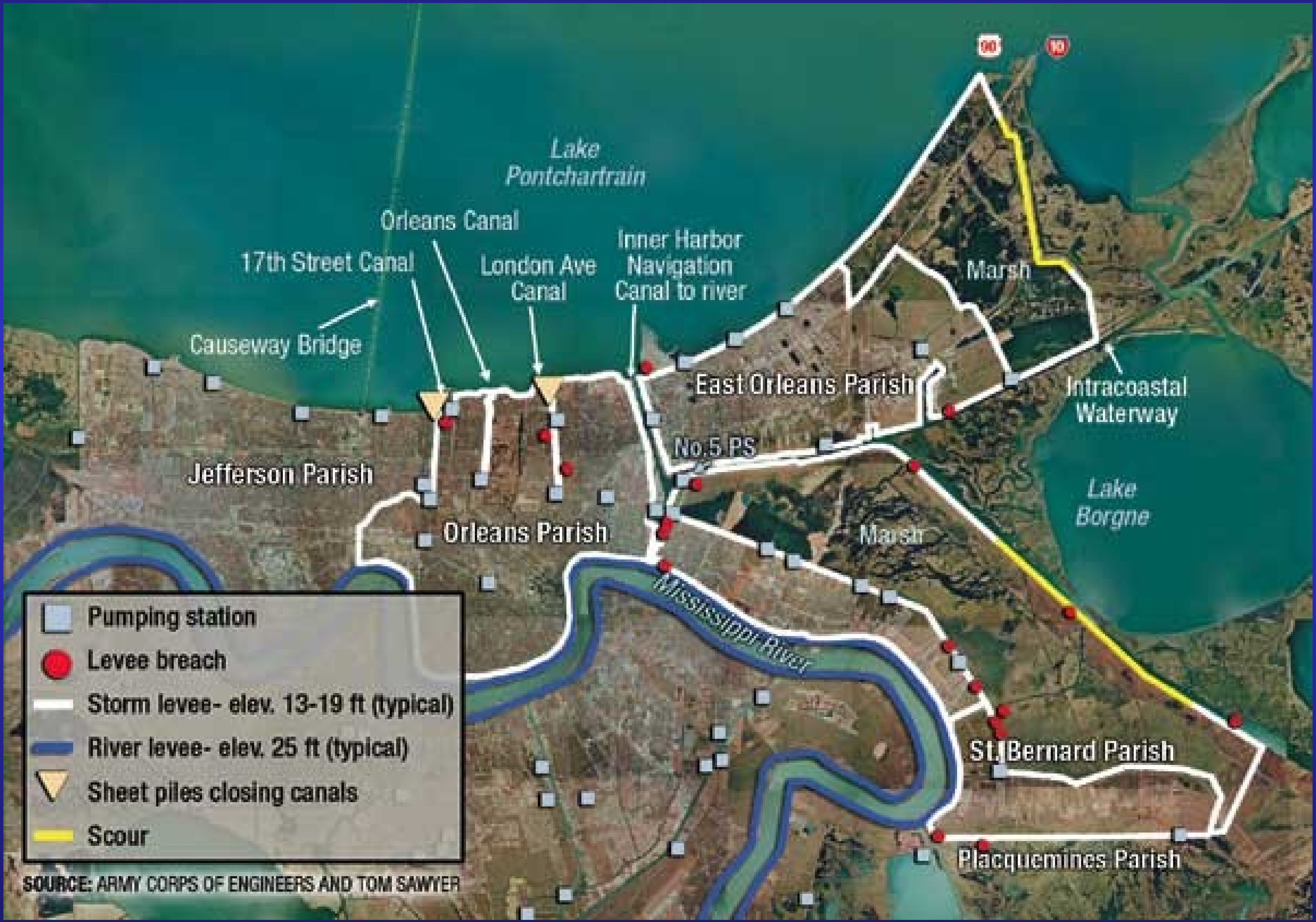

Lake Pontchartrain
B
A
New Orleans


Floodwall Along Mississippi River
A
23 FT
18 FT Project Flowline
Avg Annual Highwater 14 FT
Hurricane Protection Levee & Floodwall
B
17.5 FT
SPH Design Elevation 11.5 FT
Normal Lake 1.0 FT Level
Gentilly Ridge
Elevations in Feet NGVD
30
20
10
0
-10
-20
30
20
10
0
-10
-20
Mississippi River Bank
Canal St at River
St. Louis Cathedral
Esplanade at St. Claude
Derbigny at I-10
Gentilly Blvd at Allen
Dillard Univ Campus
St. Anthony at Wildair Dr
Wainright Dr at L. C. Simon
UNO
UNO Side of Wainright Dr
Lake Pontchartrain Shoreline

US Army Corps
of Engineers ®

Metropolitan New Orleans

TASK FORCE HOPE



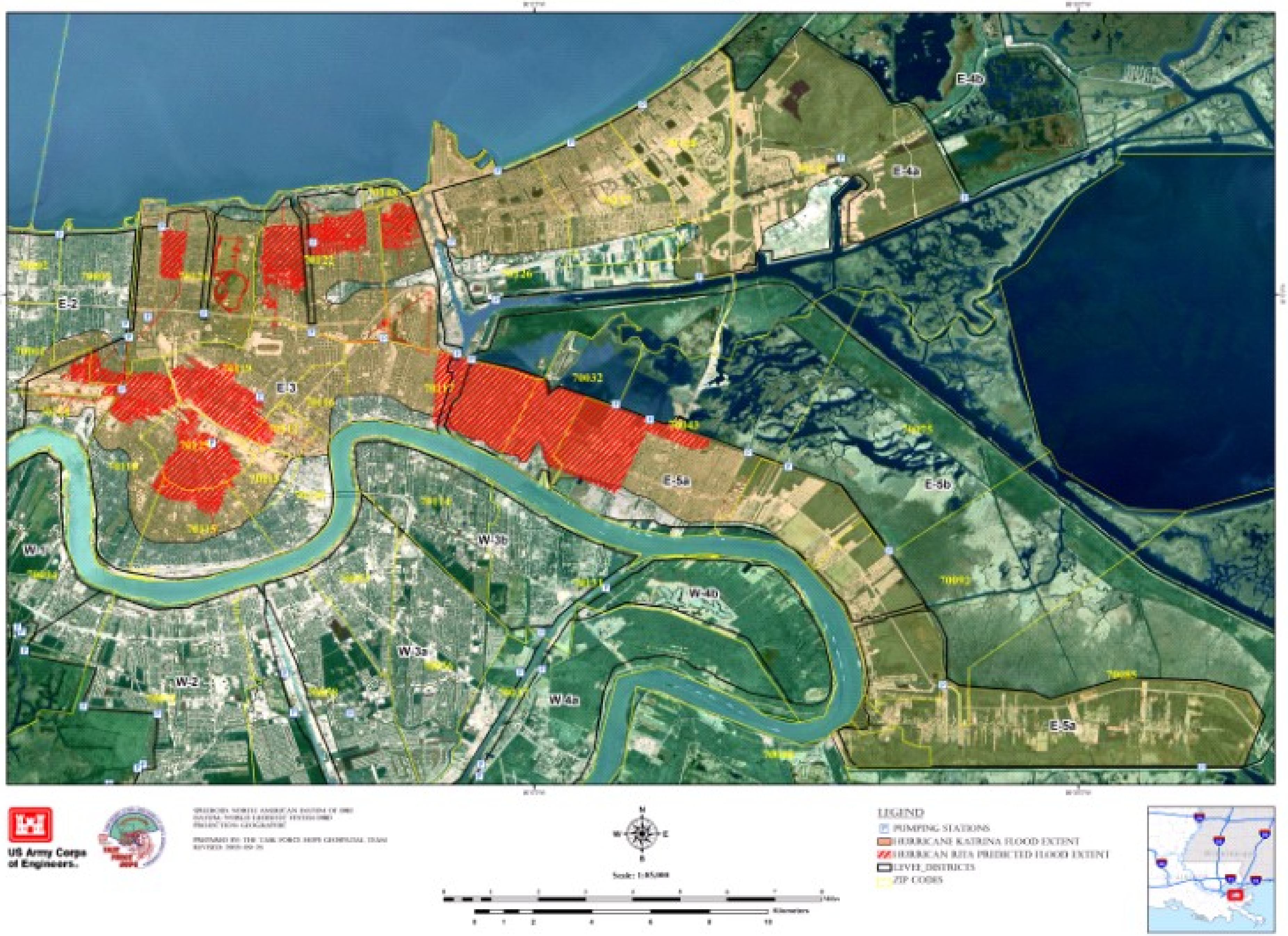
Lake Pontchartrain
Orleans Canal
17th Street Canal
London Ave Canal
Inner Harbor Navigation Canal to river
Causeway Bridge
East Orleans Parish
Marsh
Intracoastal Waterway
No.5 PS
Jefferson Parish
Orleans Parish
Lake Borgne
Marsh
Mississippi River
St. Bernard Parish
Placquemines Parish
90
10
Pumping station
Levee breach
Storm levee- elev. 13-19 ft (typical)
River levee- elev. 25 ft (typical)
Sheet piles closing canals
Scour

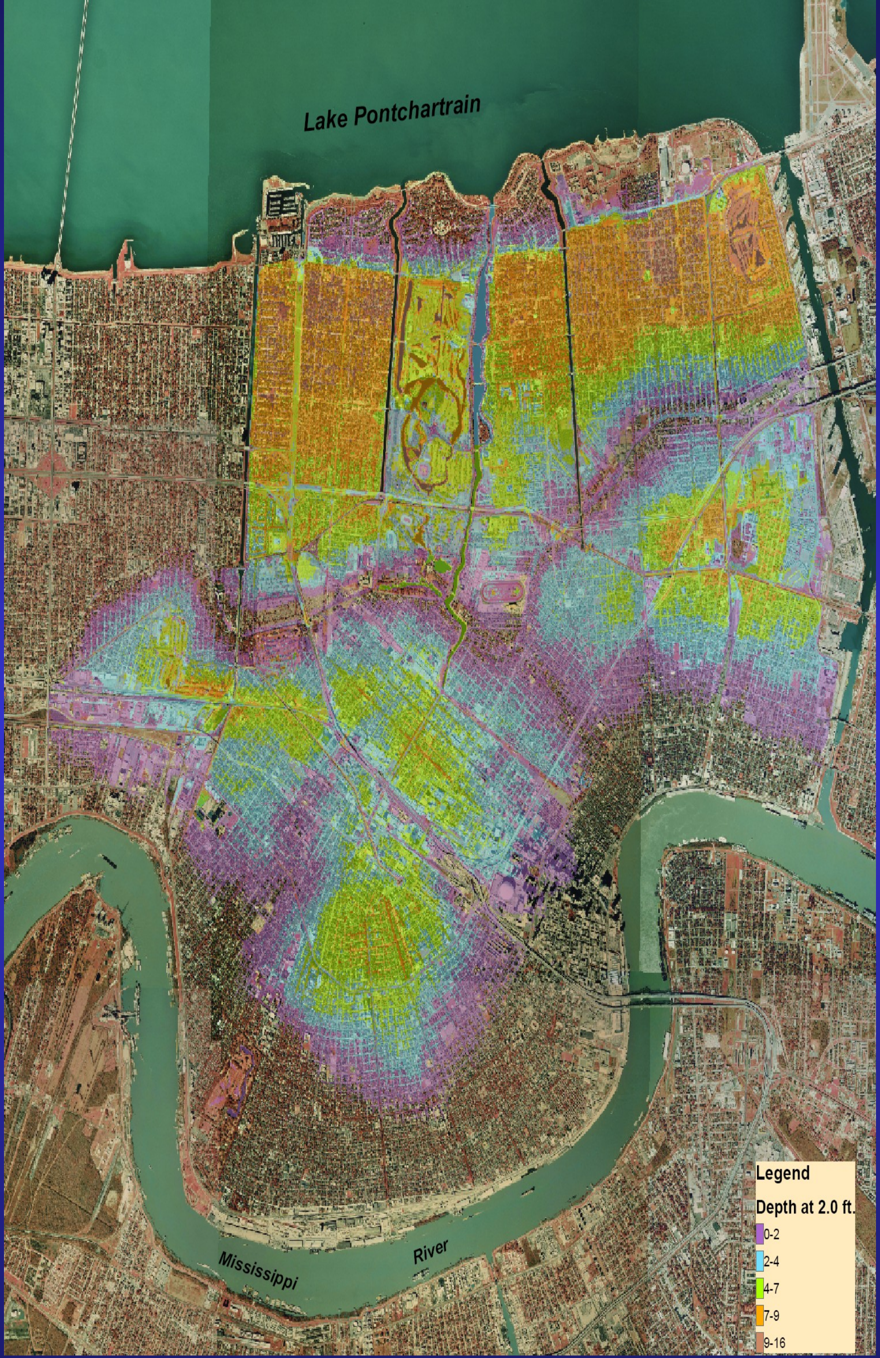
SOURCE: ARMY CORPS OF ENGINEERS AND TOM SAWYER

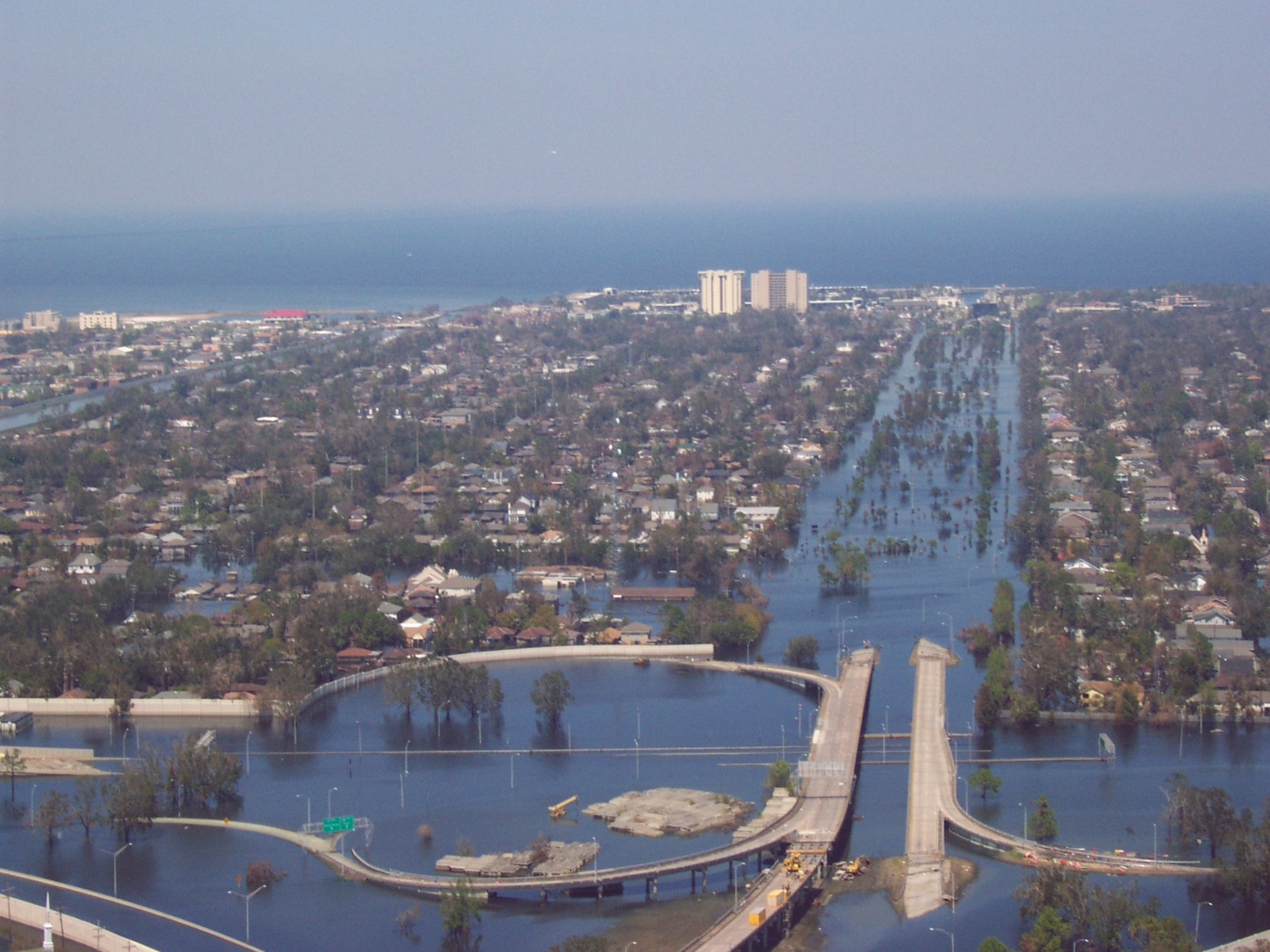
One Team: Relevant, Ready, Responsive, Reliable

Drainage System

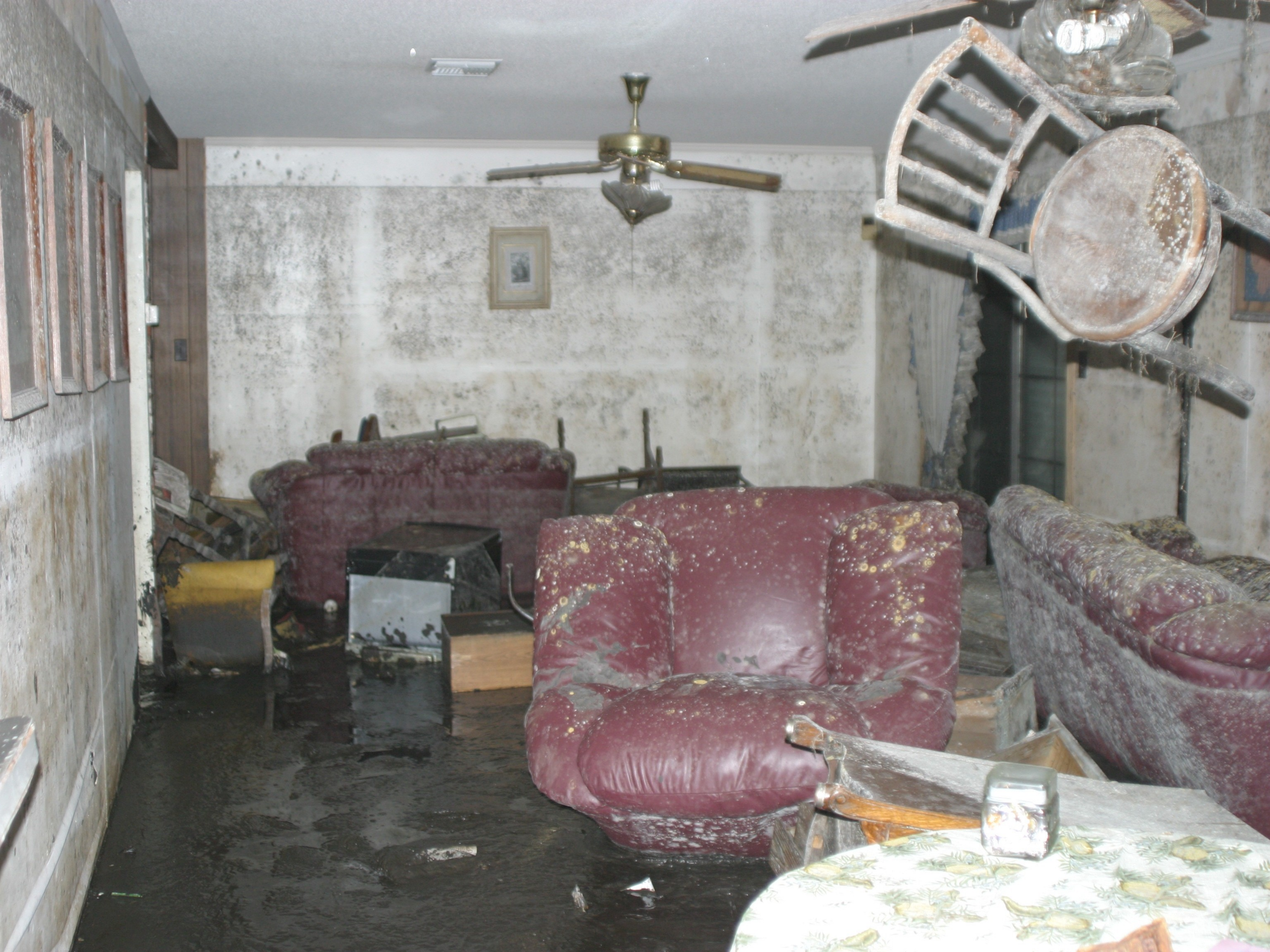
New Orleans Flooding

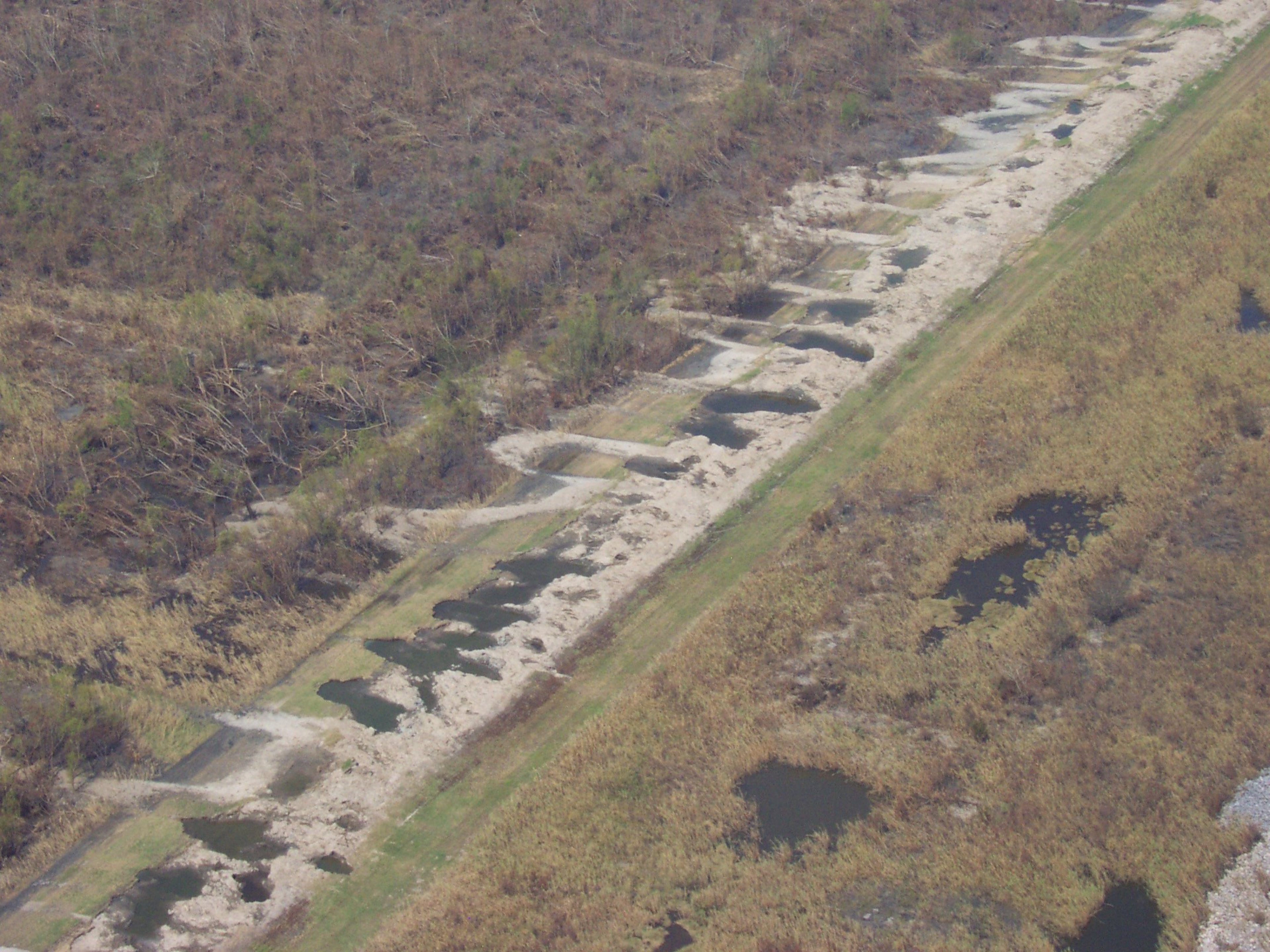

E-2
E-3
E-4a
E-4b
E-5a
E-5b
W-1
W-2
W-3a
W-3b
W-4a
W-4b
70032
US Army Corps of Engineers.
SPHEROID: NORTH AMERICAN DATUM OF 1983
DATUM: WORLD GEODETIC SYSTEM 1983
PROJECTION: GEOGRAPHIC
PREPARED BY: THE TASK FORCE HOPE GEOSPATIAL TEAM
REVISED: 2005-09-20
N
S
E
W
Scale: 1:85,000
Miles
Kilometers
0
1
2
4
6
8
10
LEGEND
PUMPING STATIONS
HURRICANE KATRINA FLOOD EXTENT
HURRICAN RITA PREDICTED FLOOD EXTENT
LEVEE_DISTRICTS
ZIP CODES

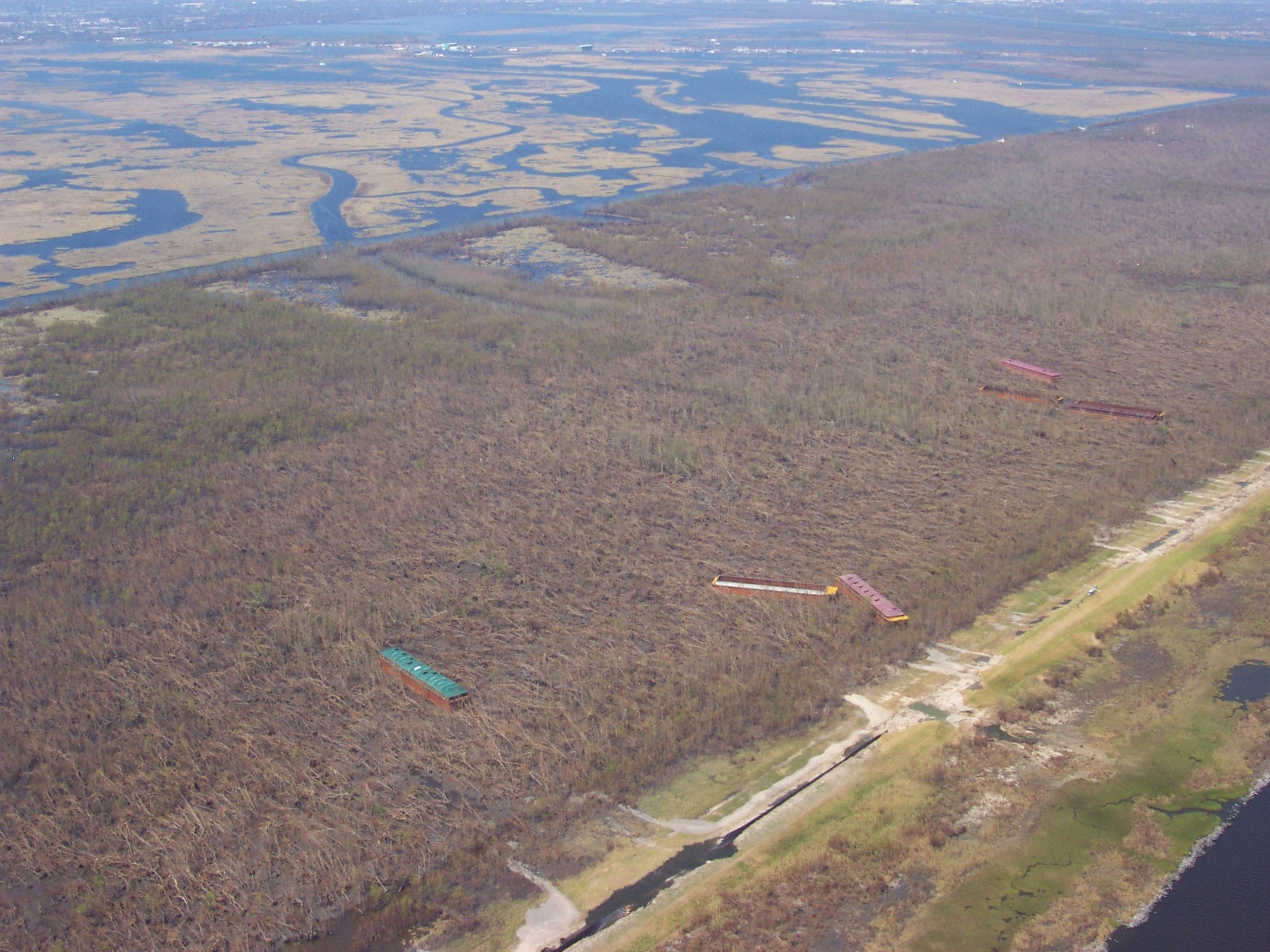

Lake Pontchartrain
Mississippi
River
Legend
Depth at 2.0 ft.
0-2
2-4
4-7
7-9
9-16

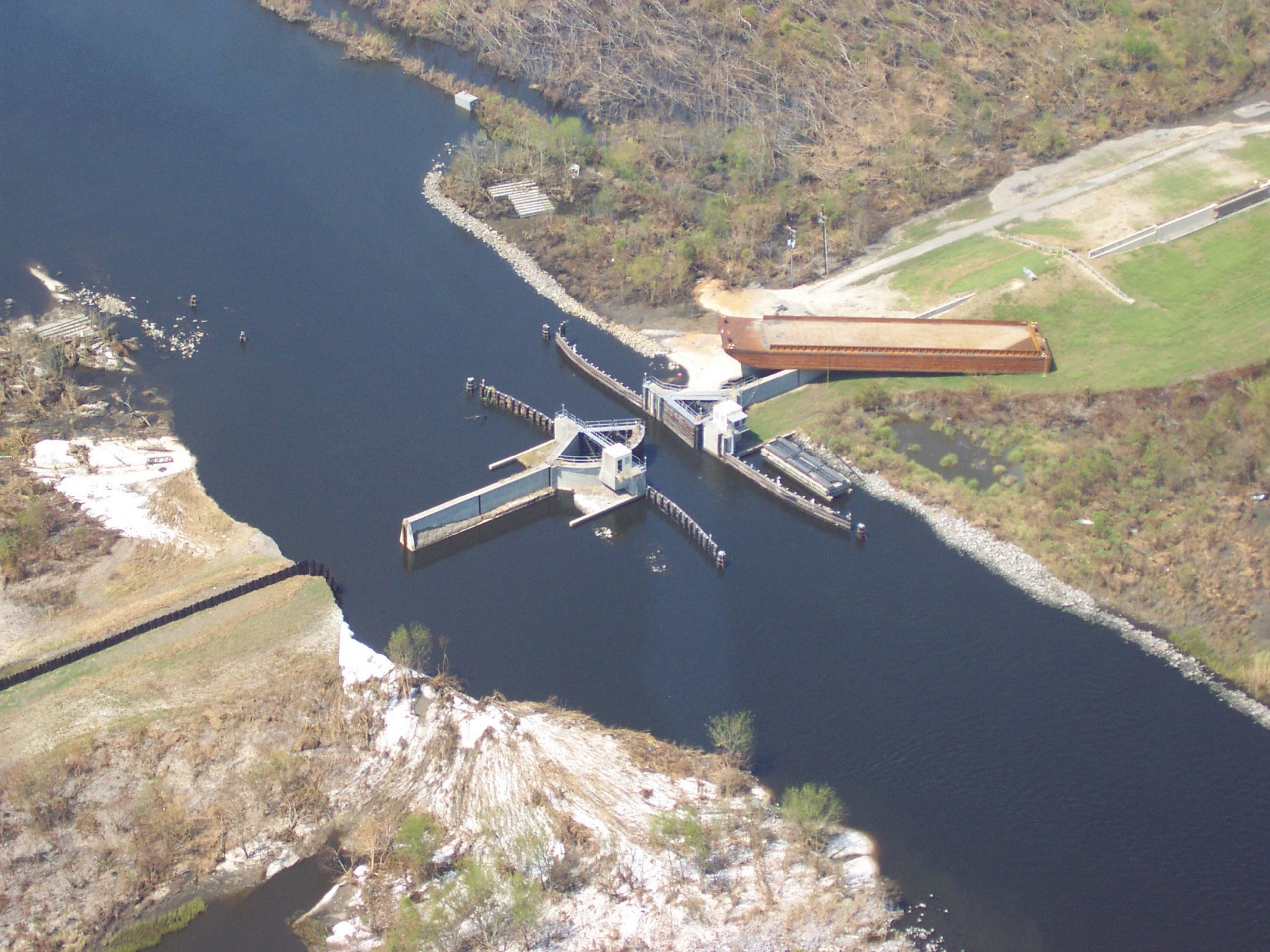


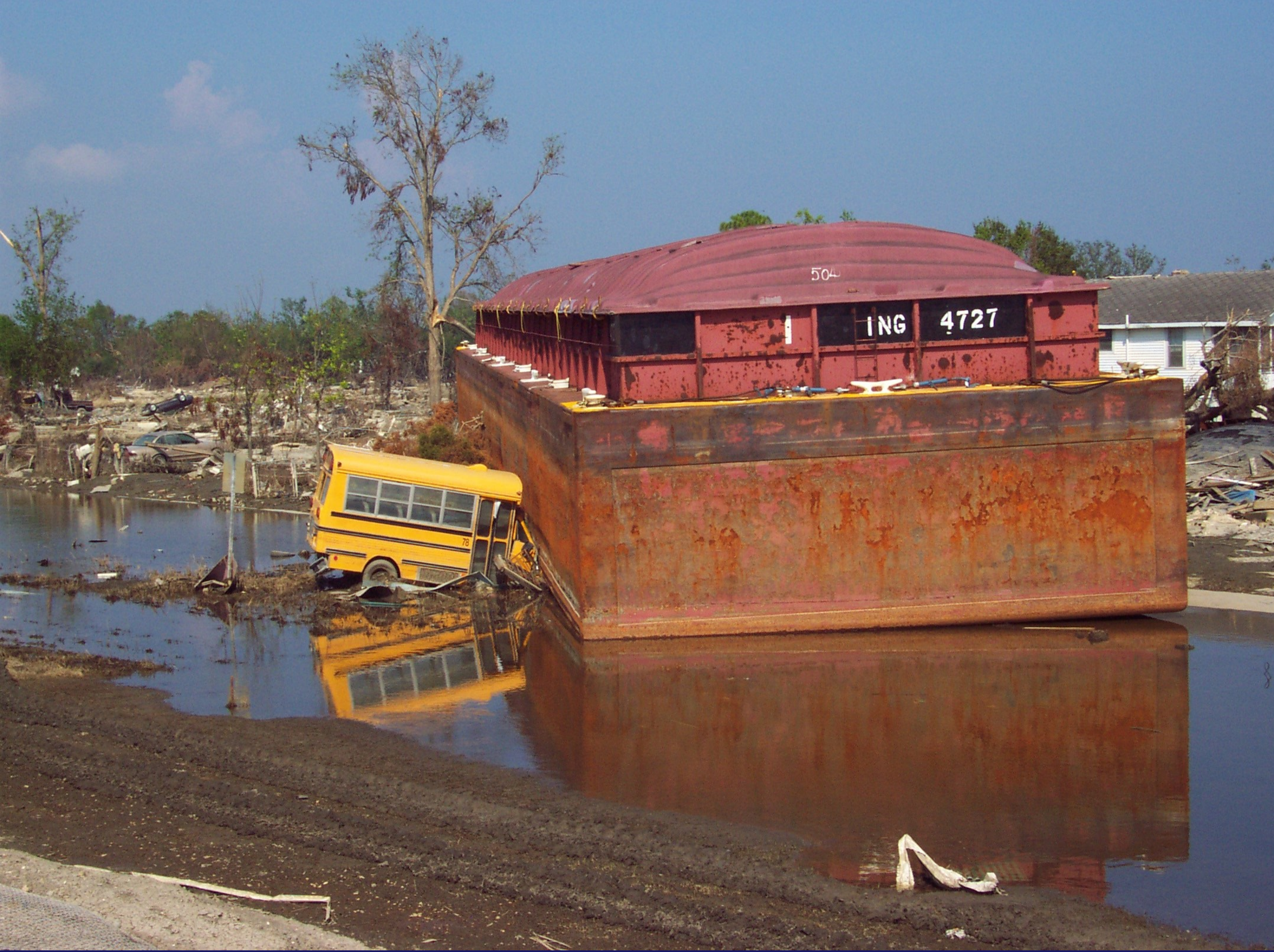
GAPINSKI
U.S. ARMY

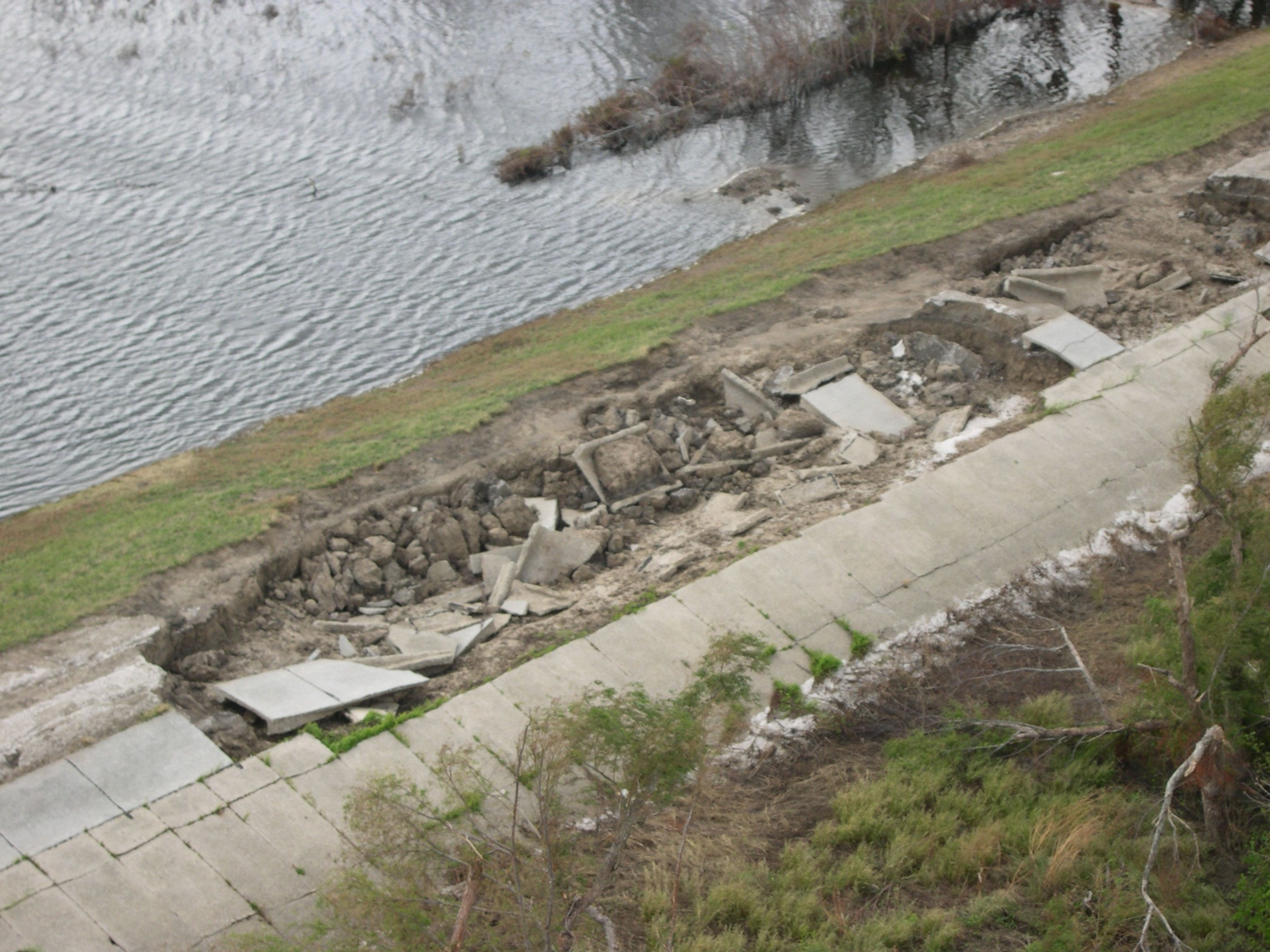









504
ING 4727
78



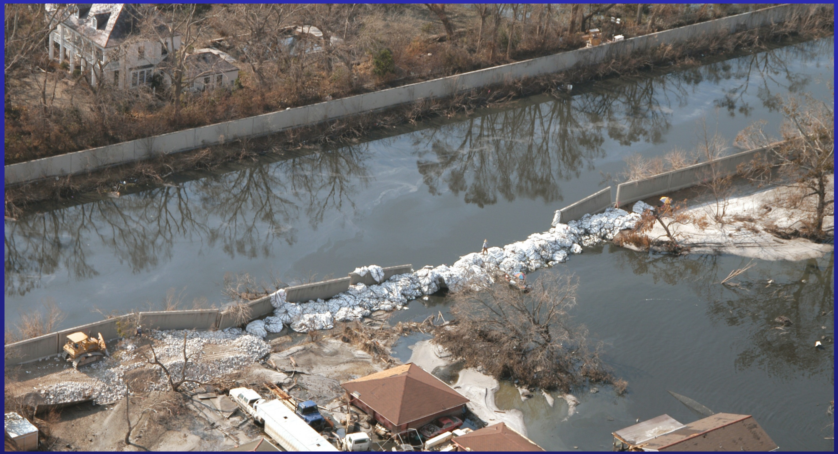
Task Force Unwatering

Basic Strategy

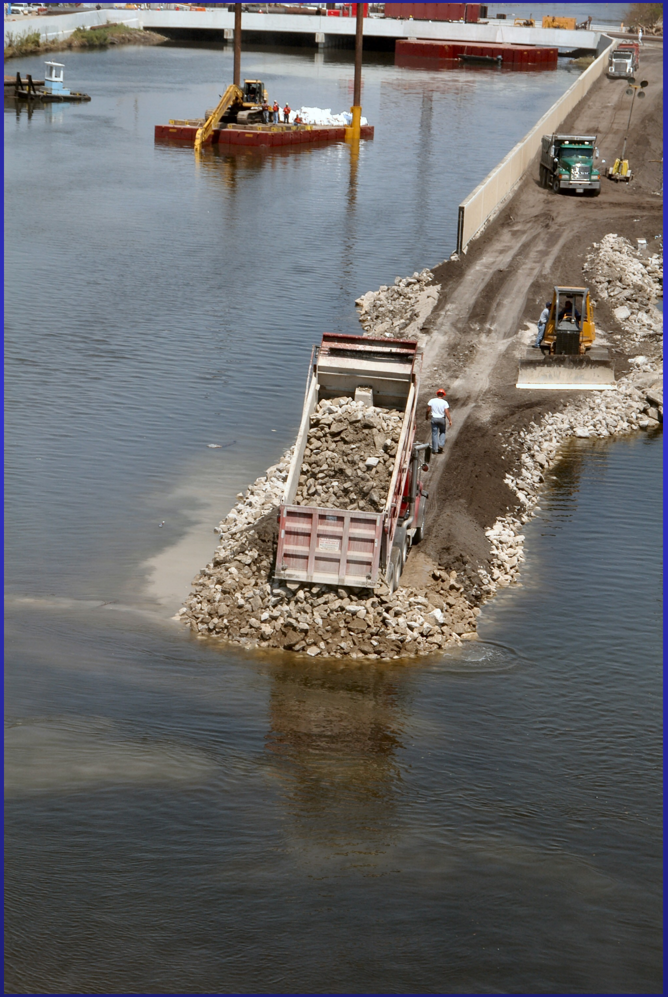
US Army Corps
of Engineers ®

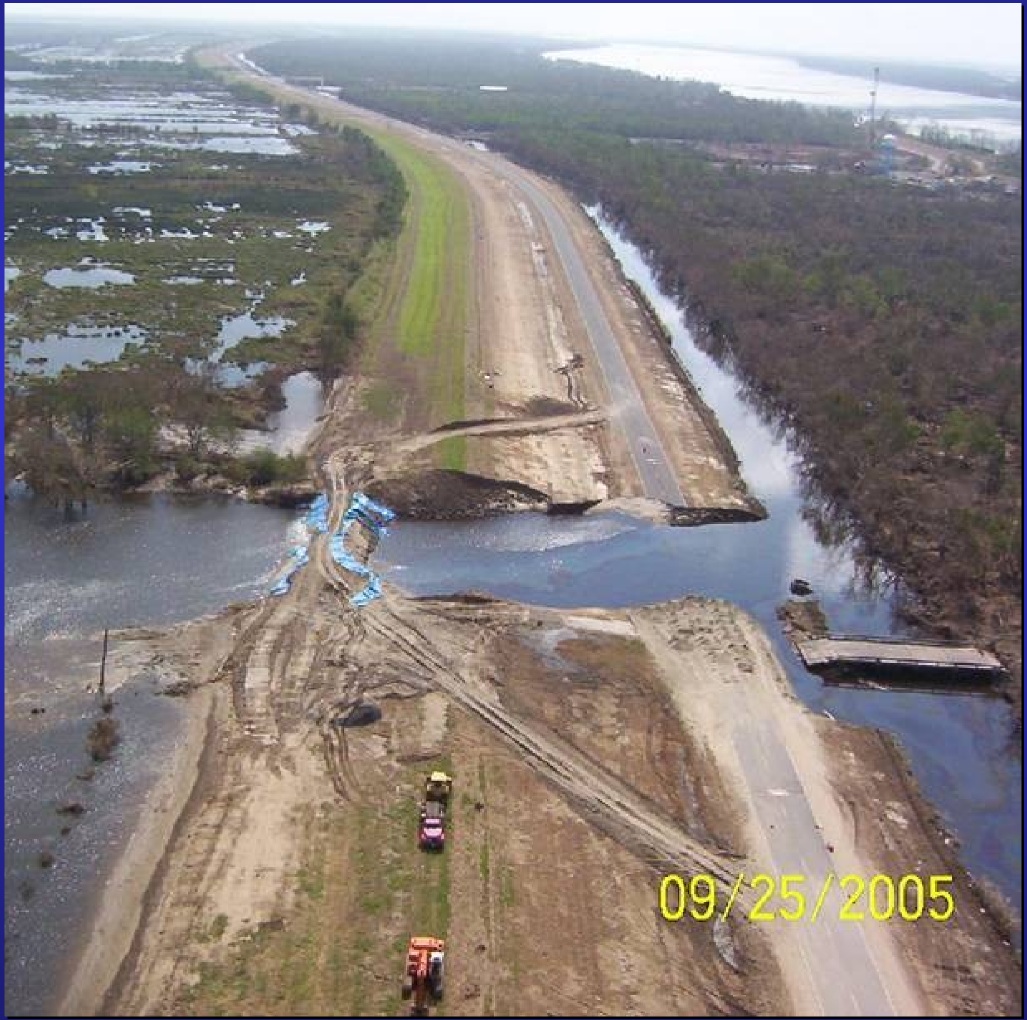
Basic Strategy

US Army Corps of Engineers
Emergency Operations



Basic Strategy





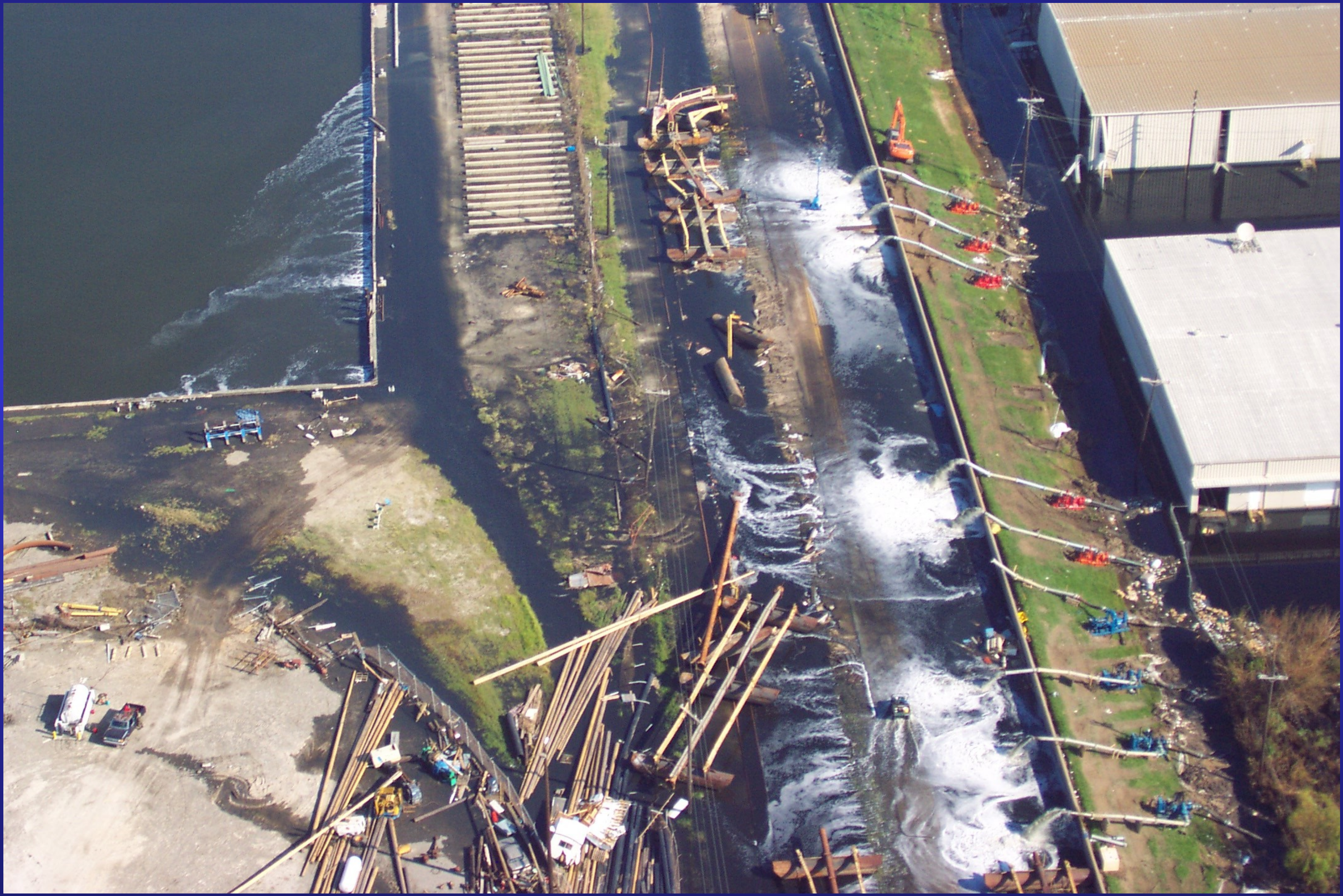
Basic Strategy

Basic Strategy

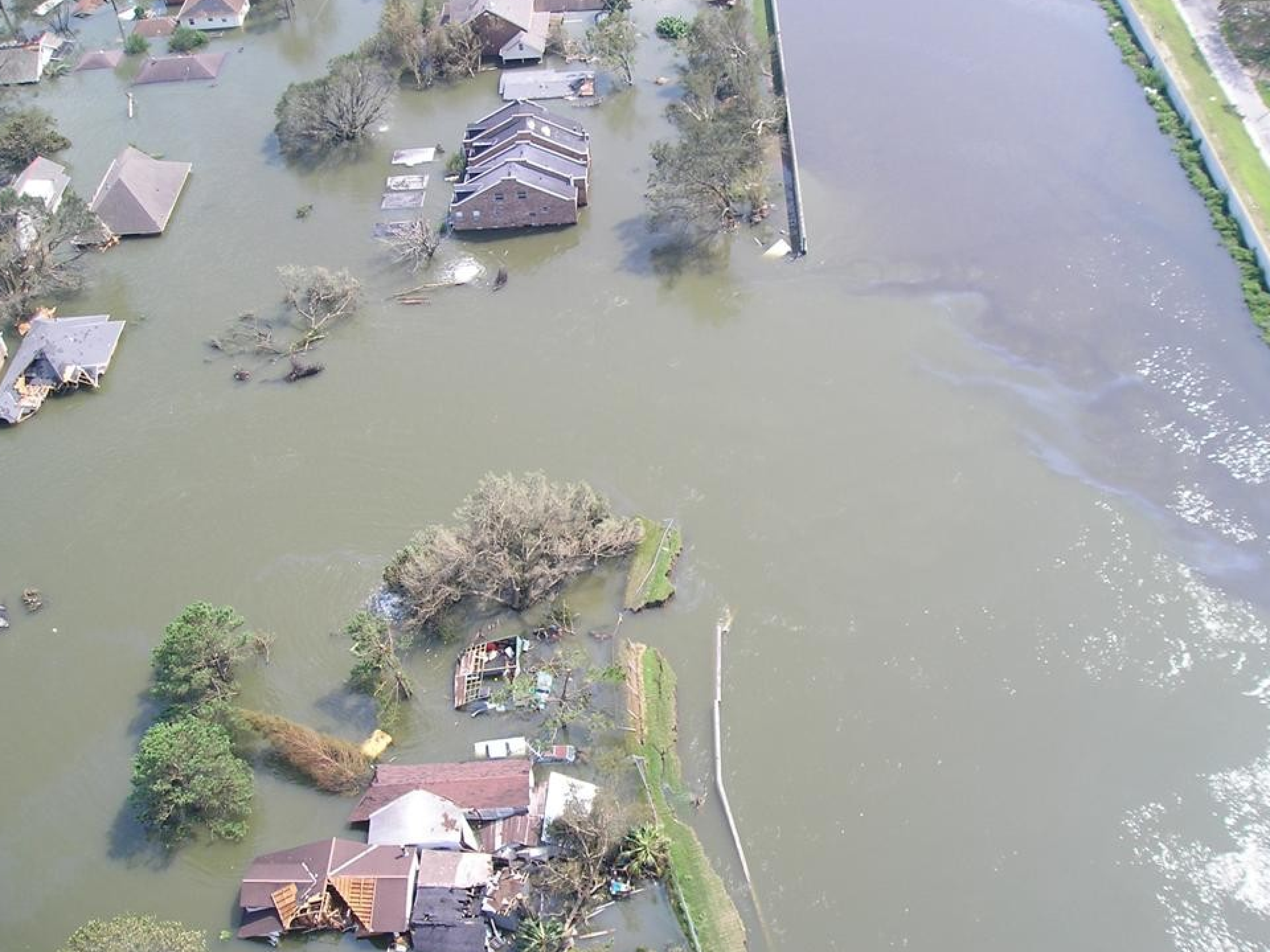
US Army Corps
of Engineers ®

Basic Strategy

Basic Strategy

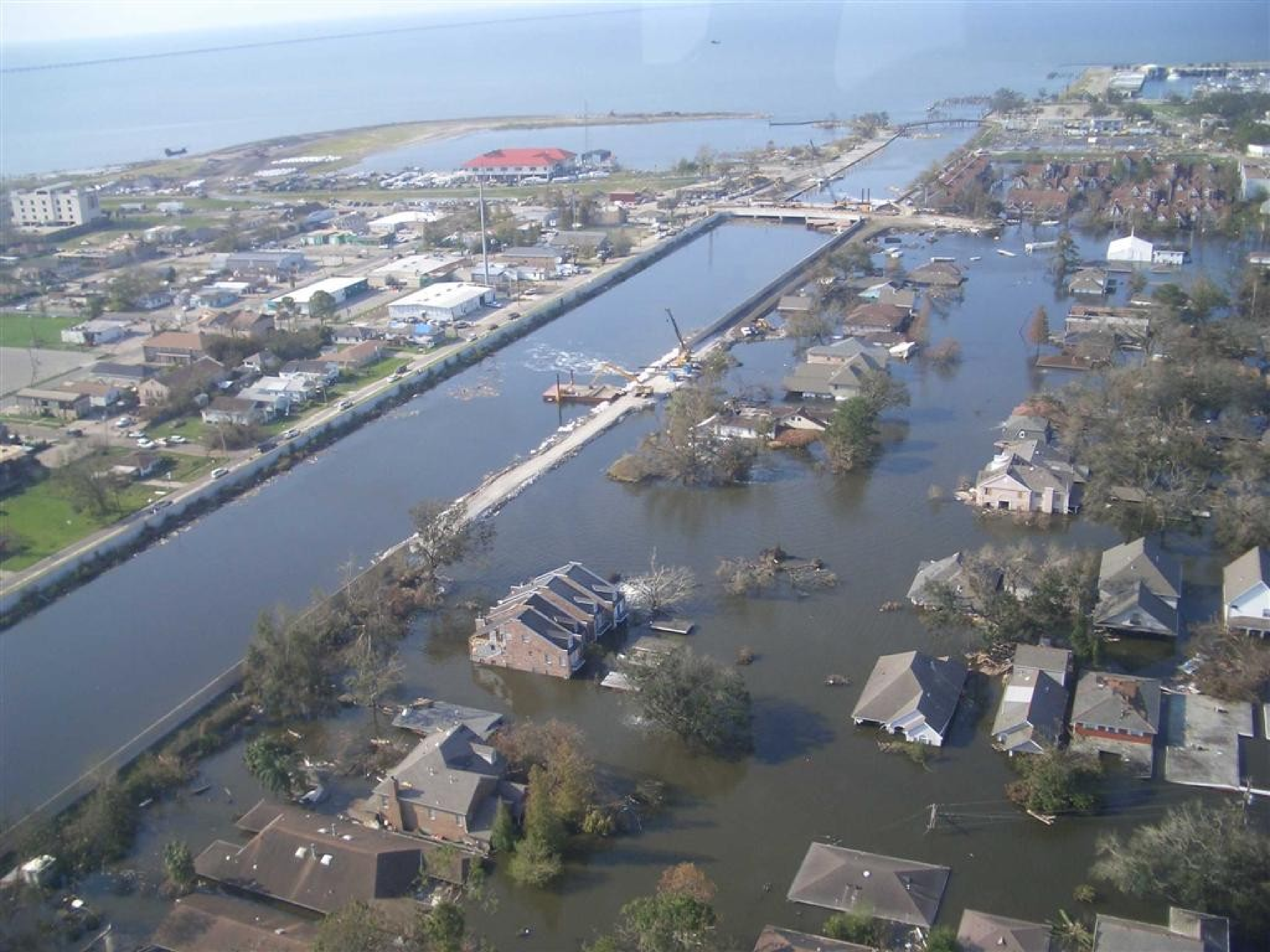


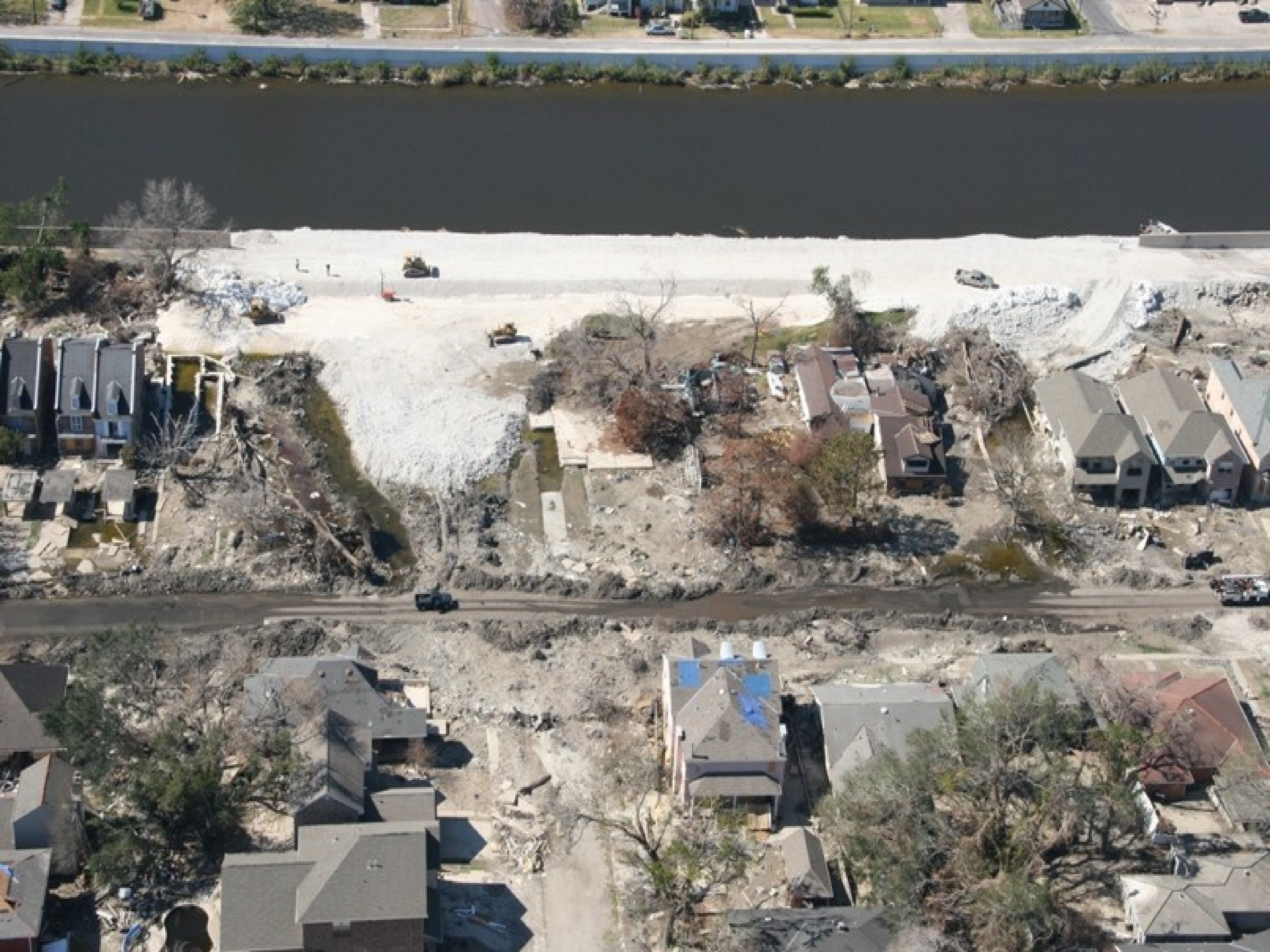
RESULTS

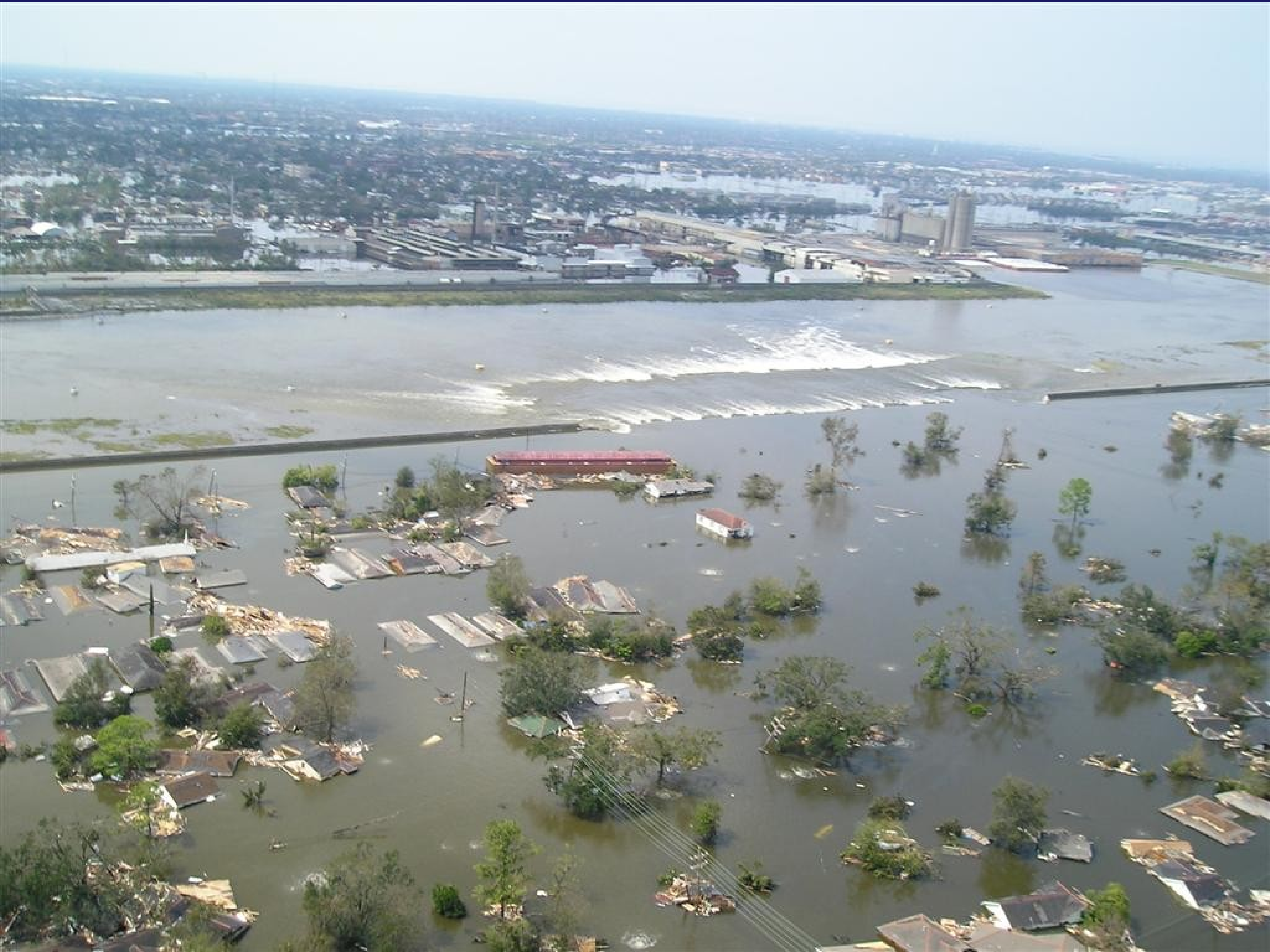


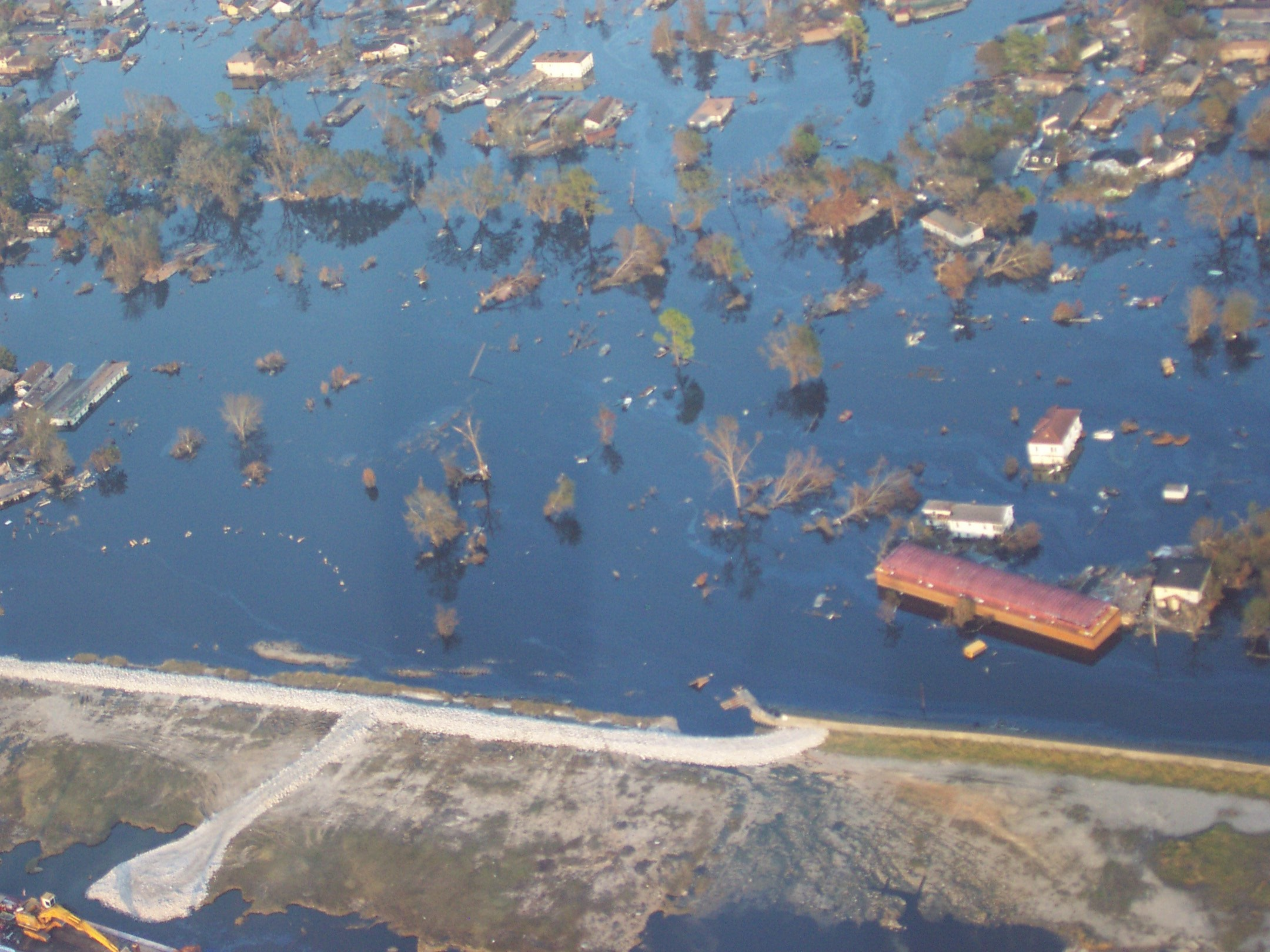
US Army Corps
of Engineers ®

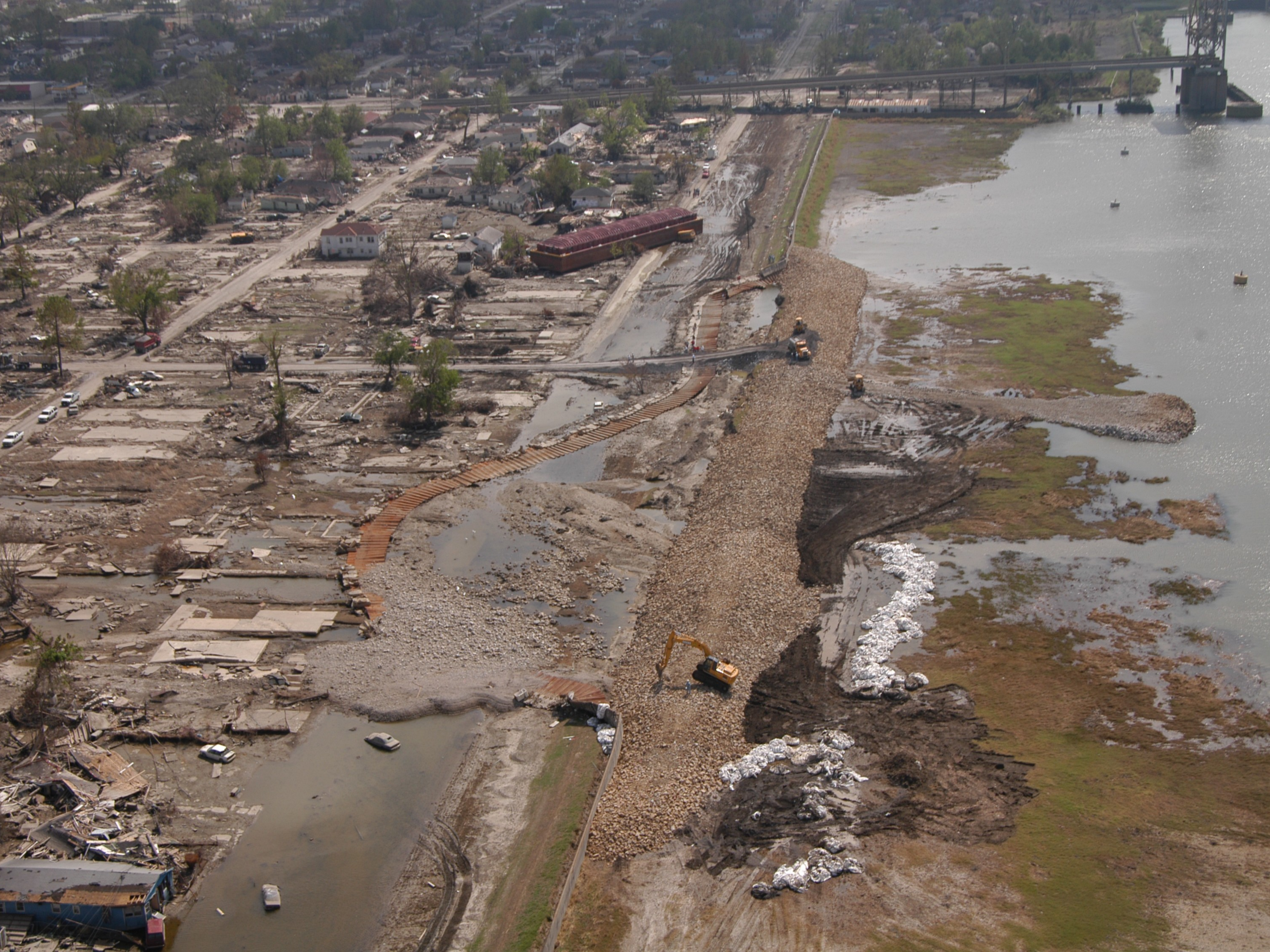
One Team: Relevant, Ready, Responsive, Reliable

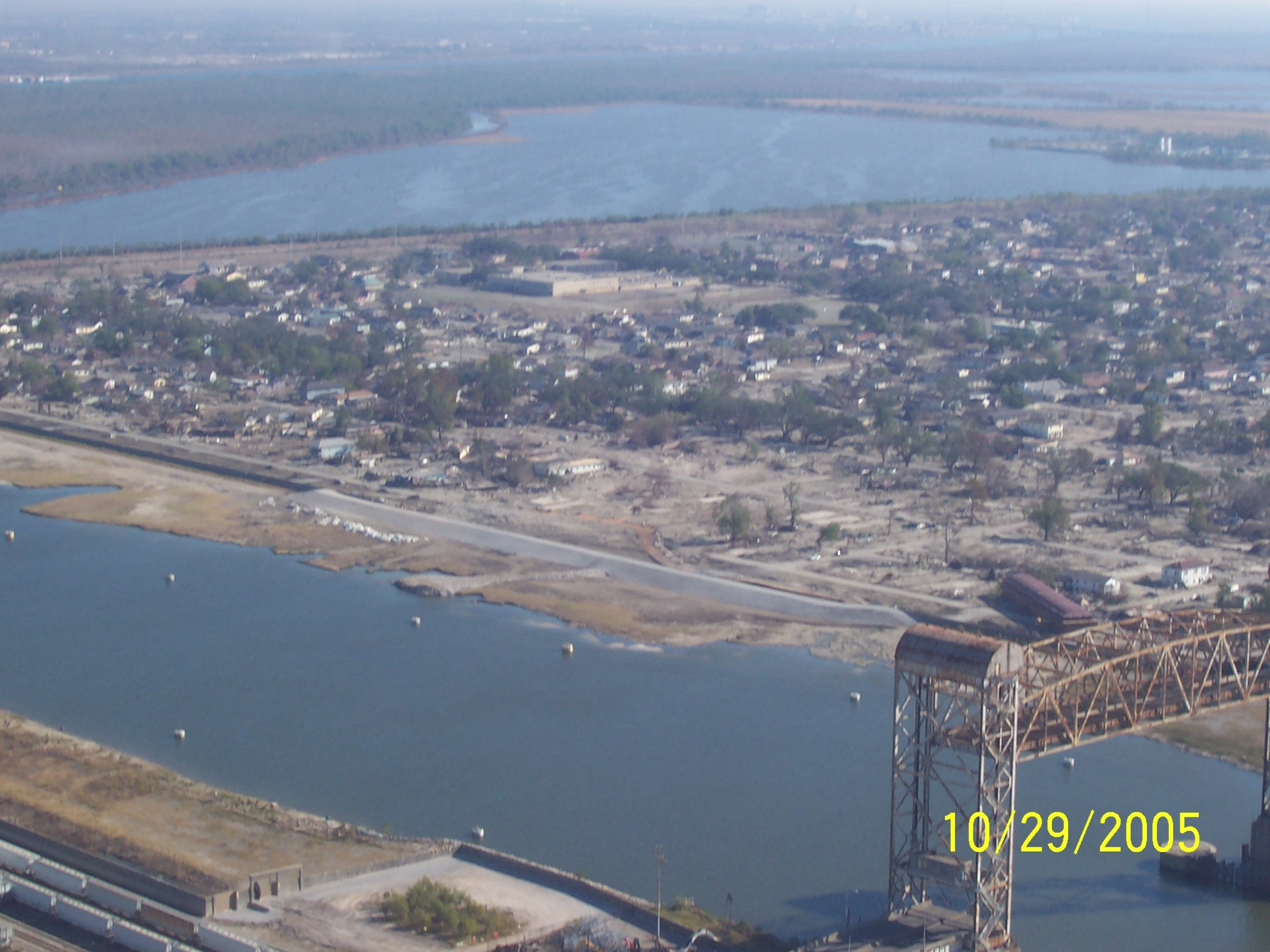


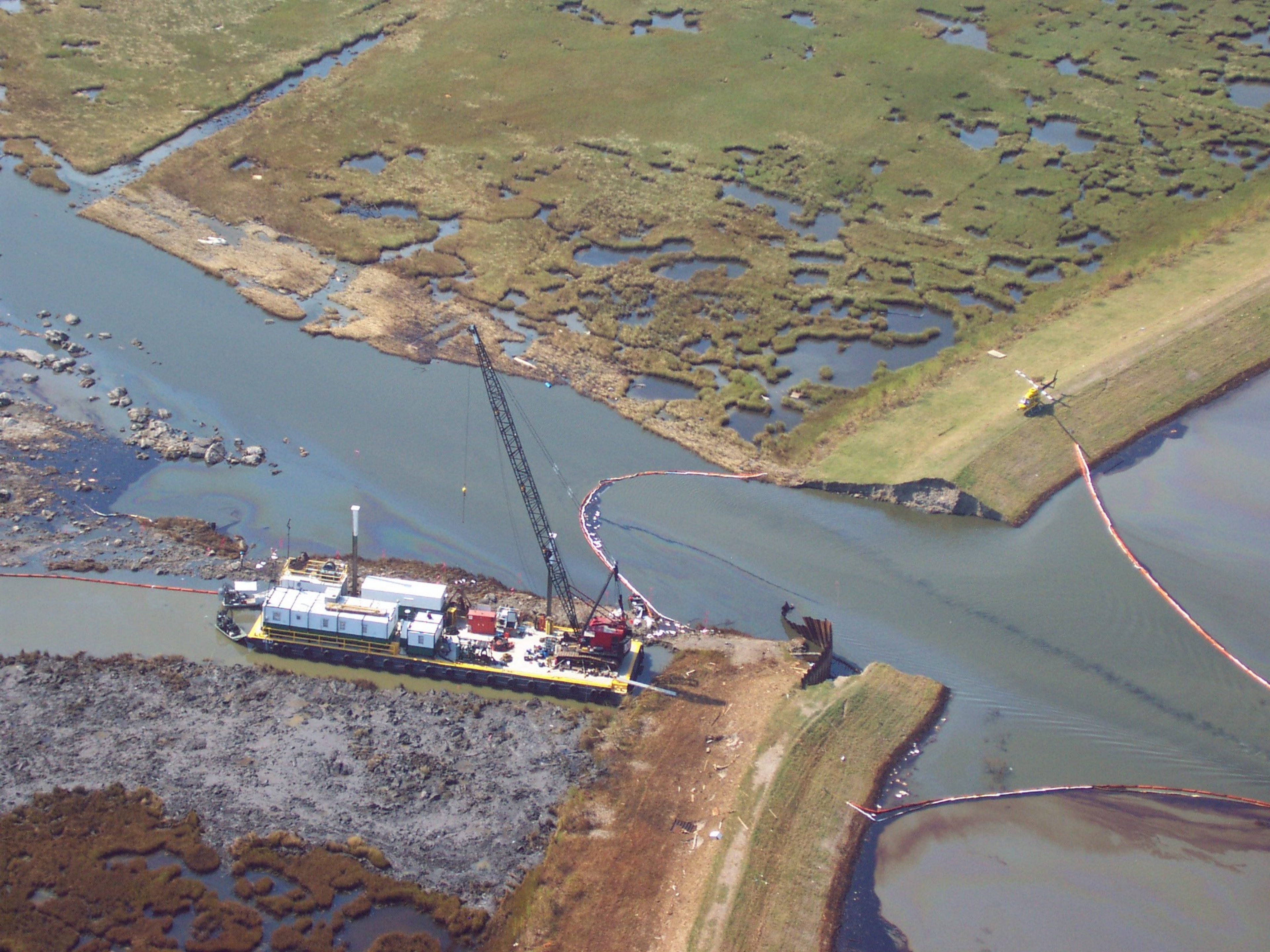









10/29/2005



TURBO
CAUTION
MAGNUM
Country Joe

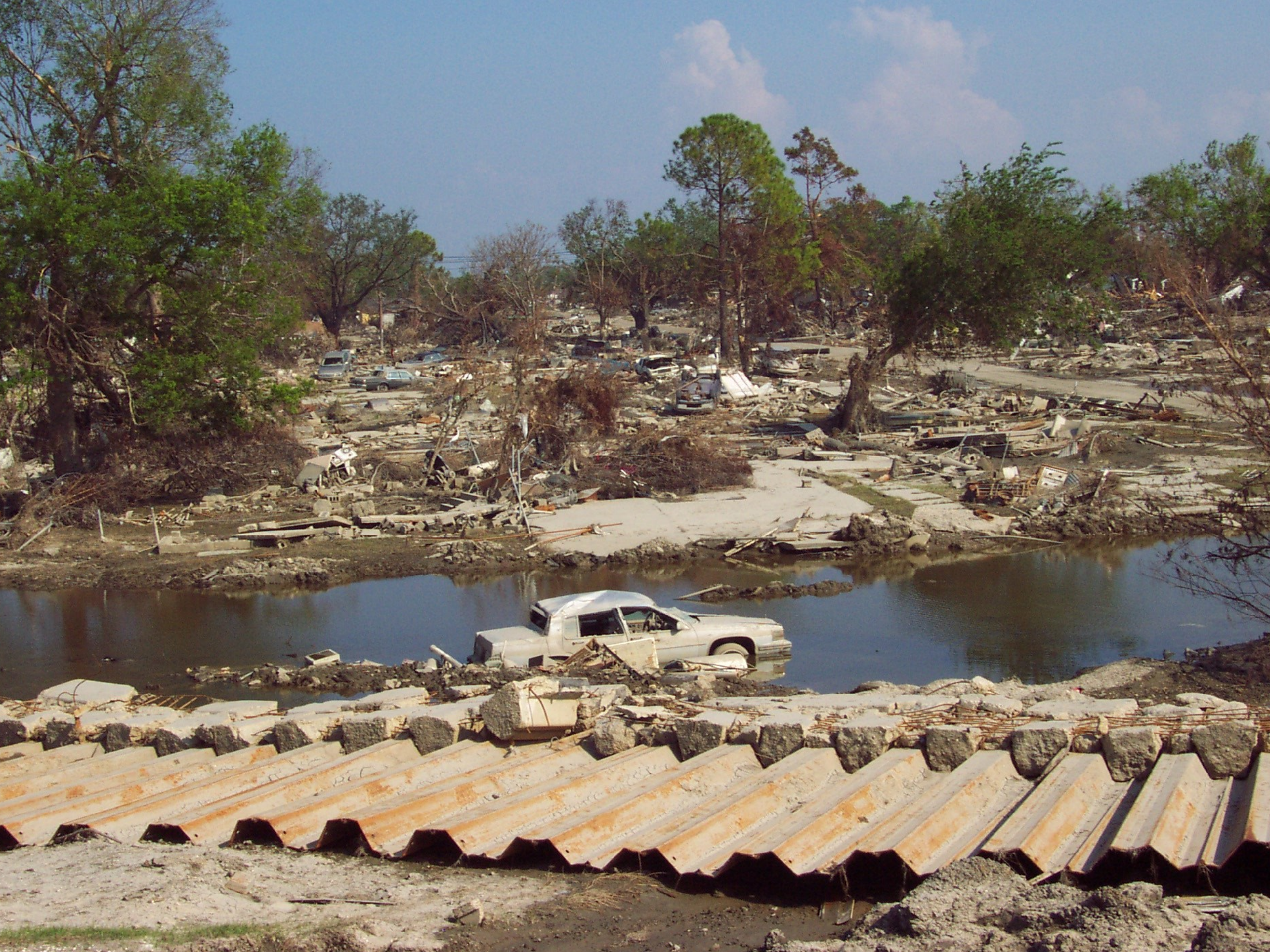
US Army Corps
of Engineers ®

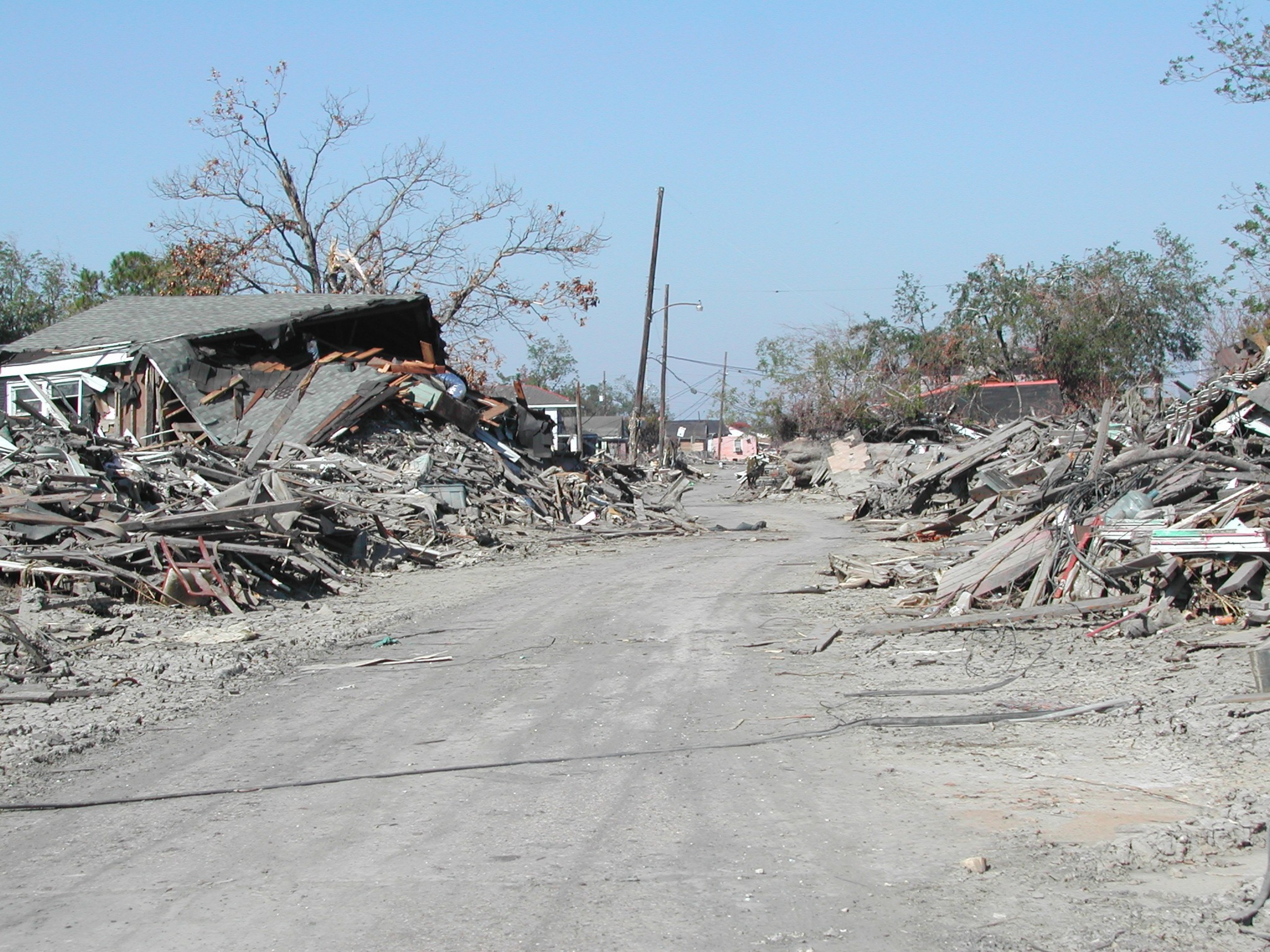
Drained 250+ Billion Gallons of Water

Repaired Nine Major Breaches

Provided Near Term Protection

The Big Easy





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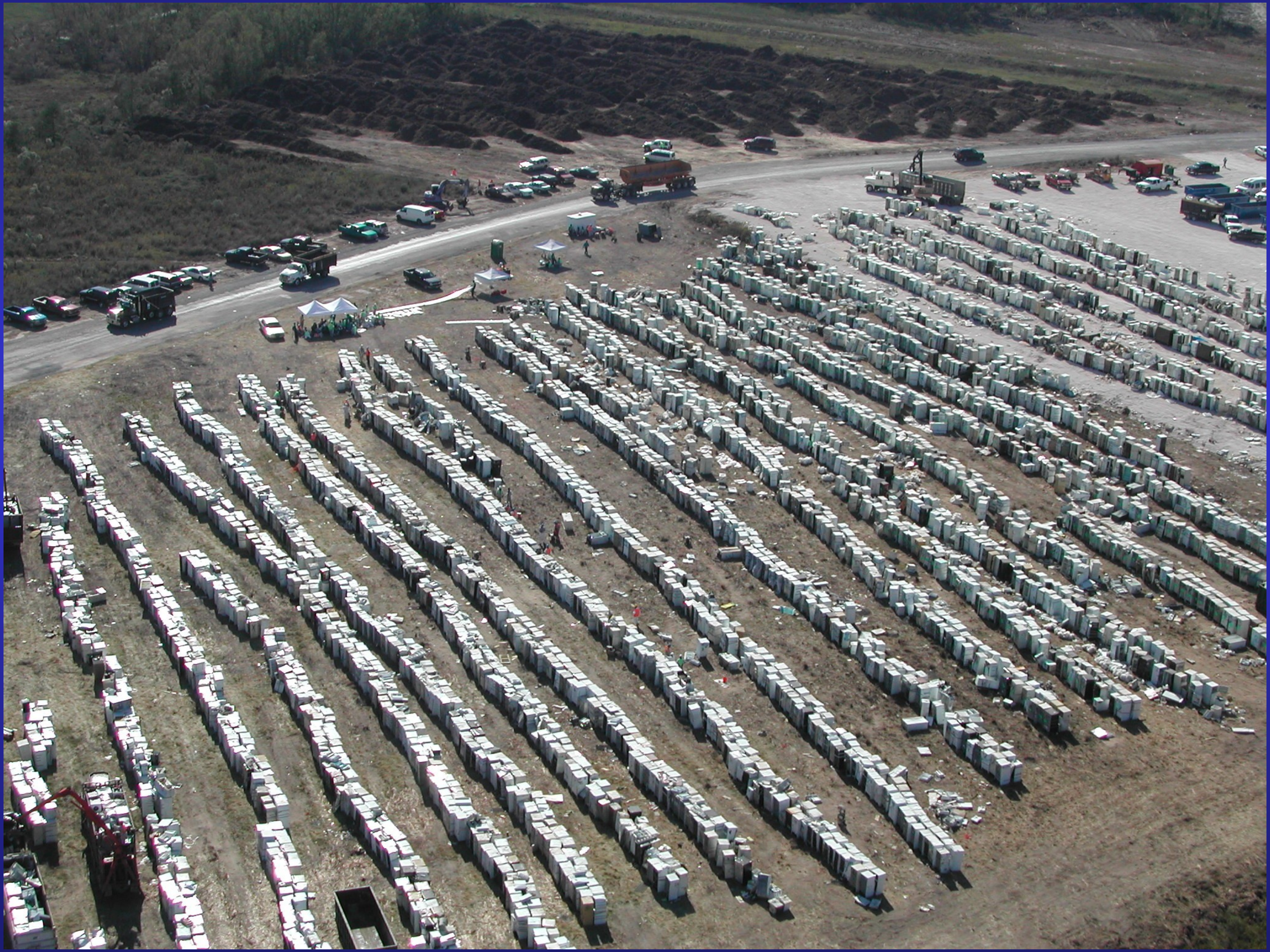
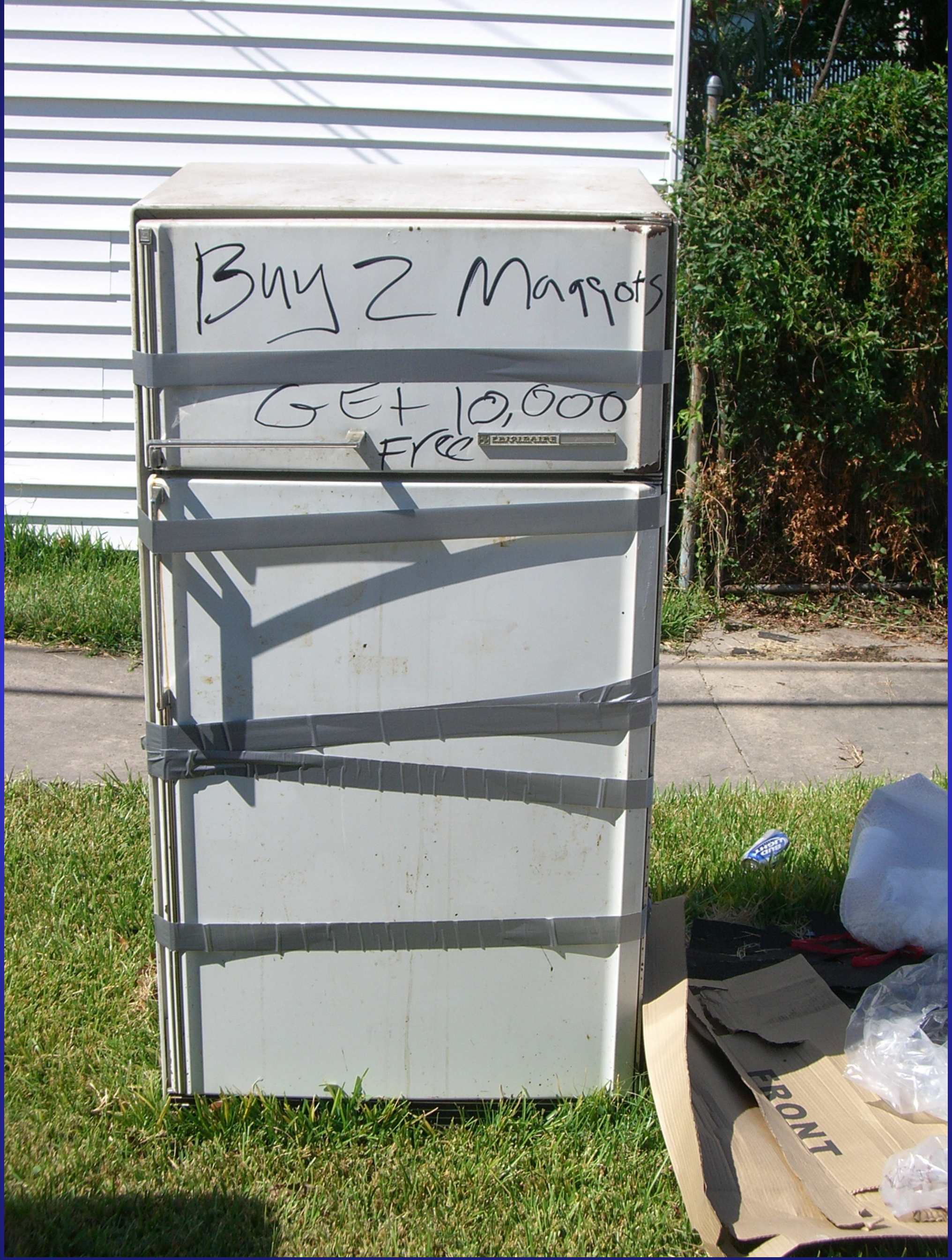
of Engineers ®

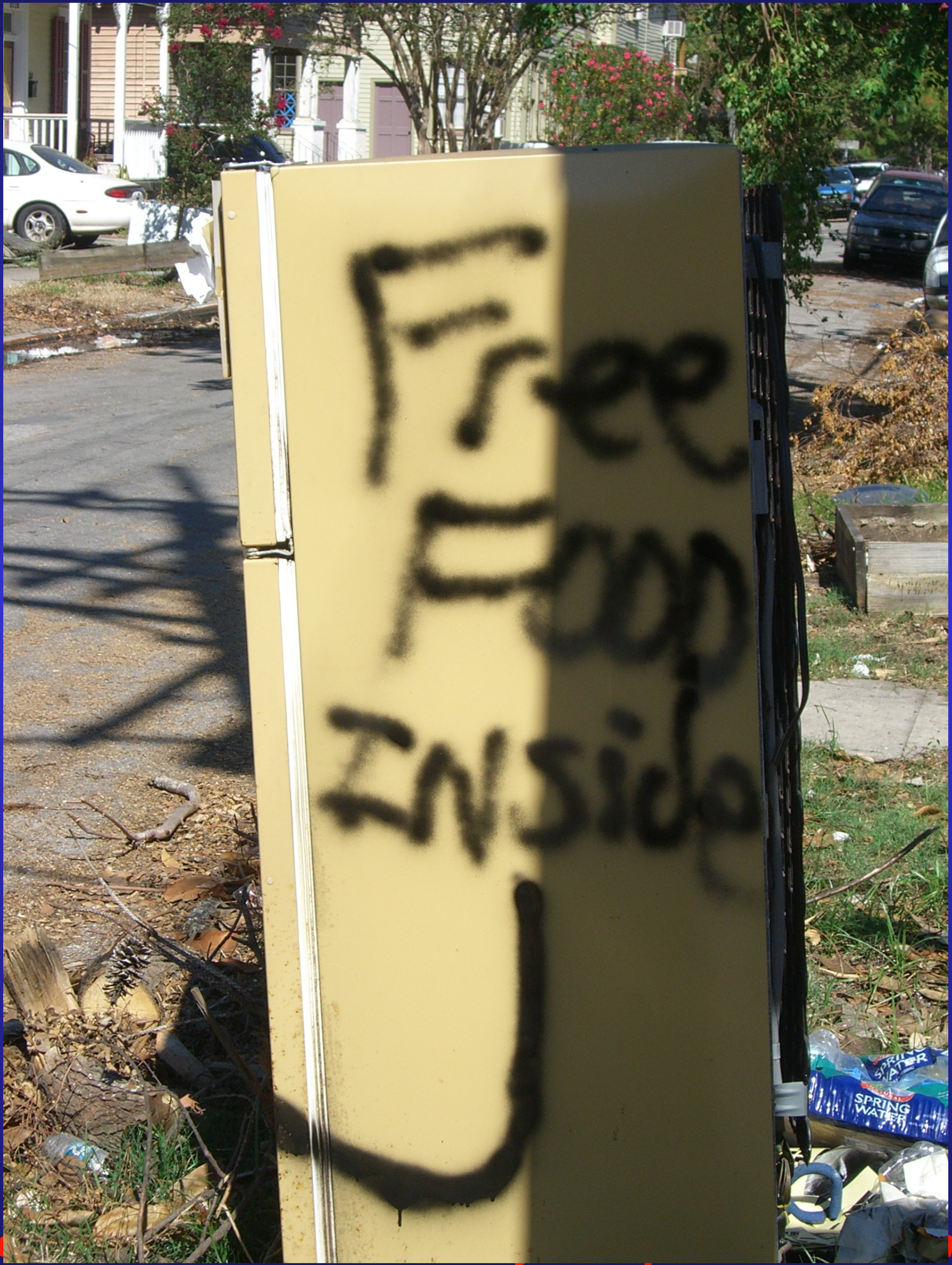
Refrigerator Graveyard



I went looting in New Orleans and all I got was this Stinkin' FRIDGE!
VOODO GOD DOG USA YES NOW 5115
16105


Buy 2 Maggots
Get 10,000
Free
FRIGIDAIRE
FRONT

US Army Corps of Engineers ®


Free
FOOD
INSide
SPRING WATER

MY
TUMMY
HURTS

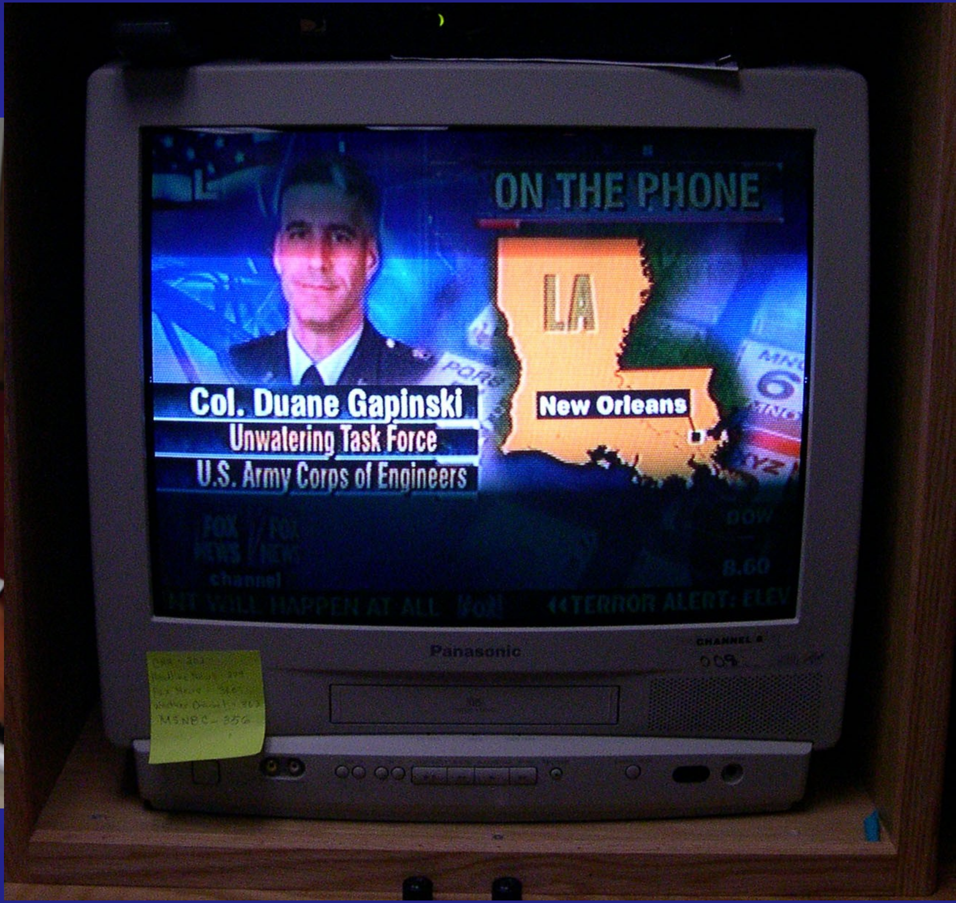
U.S.ARMY

CNN
Hi MITC
xoxoxo
-Soledad

Hi Mitc
xoxoxo
-Soledad

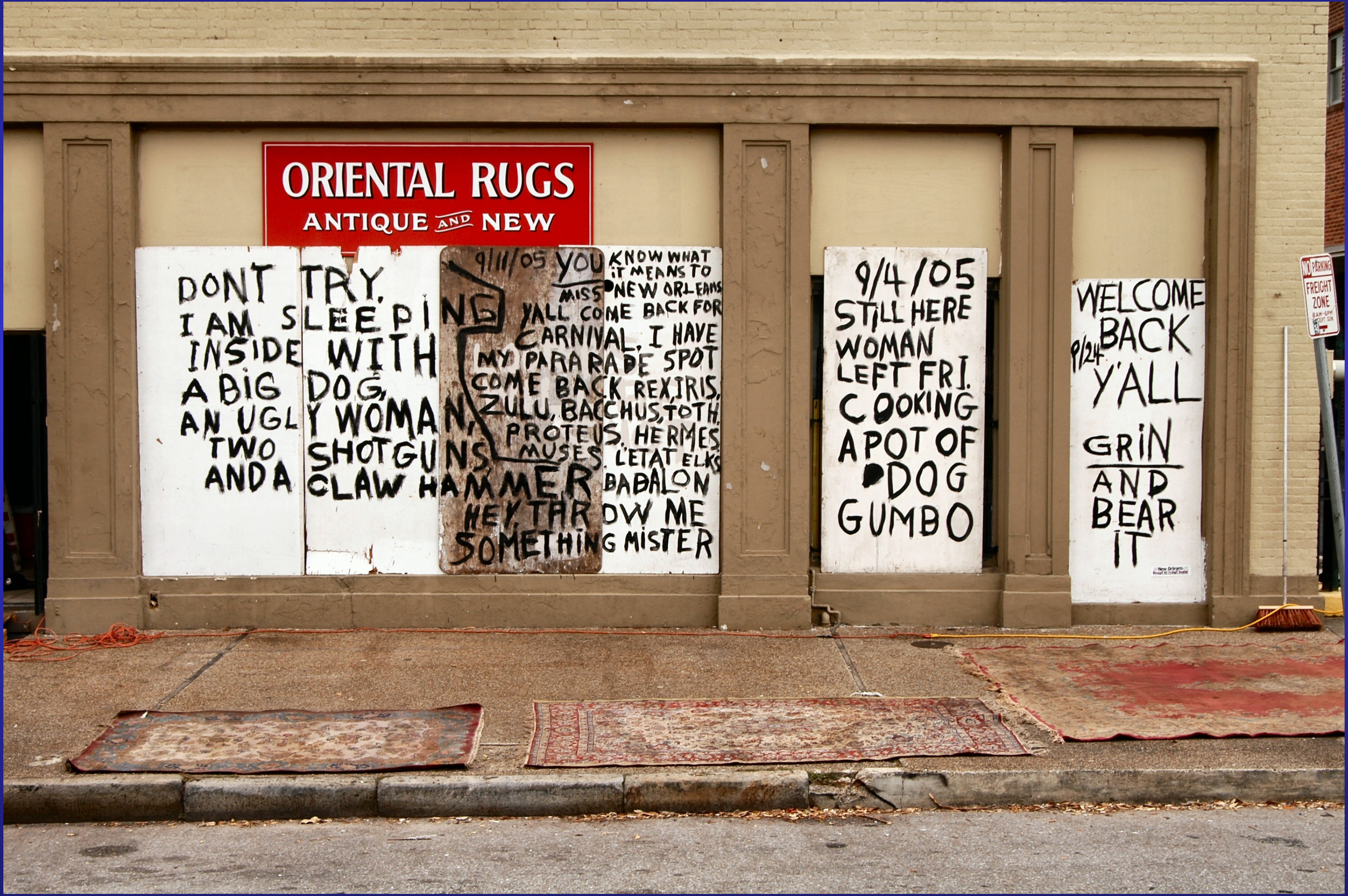
FRE
GAPINSKI

Emergency Operations


ON THE PHONE
LA
New Orleans
Col. Duane Gapinski
Unwatering Task Force
U.S. Army Corps of Engineers
Panasonic

US Army Corps
of Engineers ®

TASK FORCE HOPE


ORIENTAL RUGS
ANTIQUE AND NEW
DONT TRY.
I AM SLEEPING
INSIDE WITH
A BIG DOG,
AN UGLY WOMAN,
TWO SHOTGUNS
AND A CLAW HAMMER
9/11/05 YOU KNOW WHAT
IT MEANS TO
MISS NEW ORLEANS
YALL COME BACK FOR
CARNIVAL. I HAVE
MY PARARADE SPOT
COME BACK REX, IRIS,
ZULU, BACCHUS, TOTH,
PROTEUS, HERMES,
MUSES, L'ETAT ELKS
BABALON
HEY THROW ME
SOMETHING MISTER
9/4/05
STILL HERE
WOMAN
LEFT FRI.
COOKING
A POT OF
DOG
GUMBO
WELCOME
BACK
9/24
Y'ALL
GRIN
AND
BEAR
IT
NO PARKING
FREIGHT ZONE

TIQUE A
DONT TRY,
I AM SLEEPI
INSIDE WITH
A BIG DOG,
N UGLY WOMA
WO SHOTGU
NDA CLAW HA

QUESTIONS?